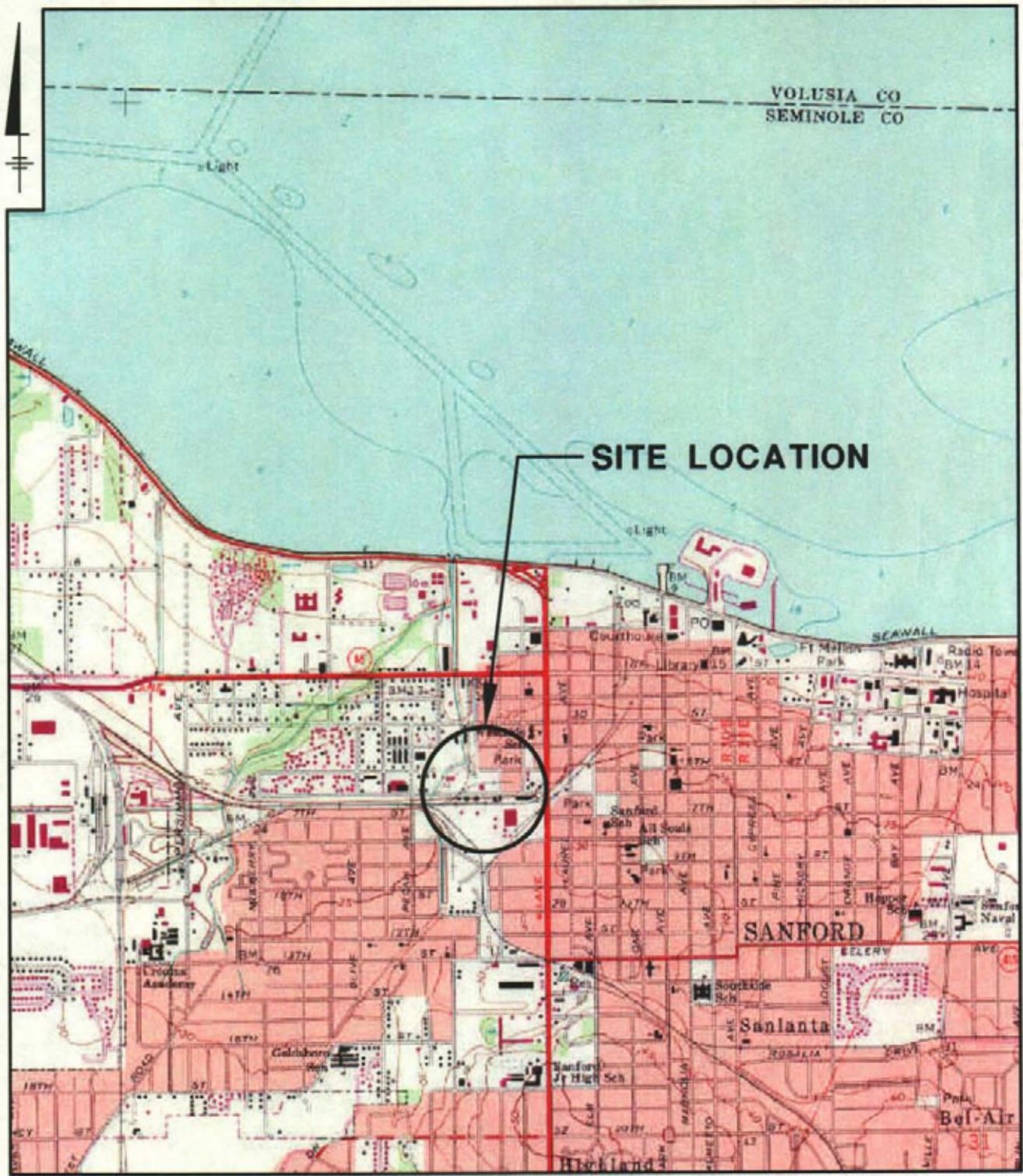


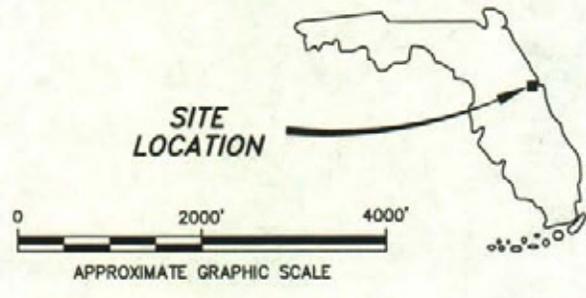
A-1. Amended ROD for Operable Unit 1, dated September 21, 2006
Part 2 of 2

FIGURES

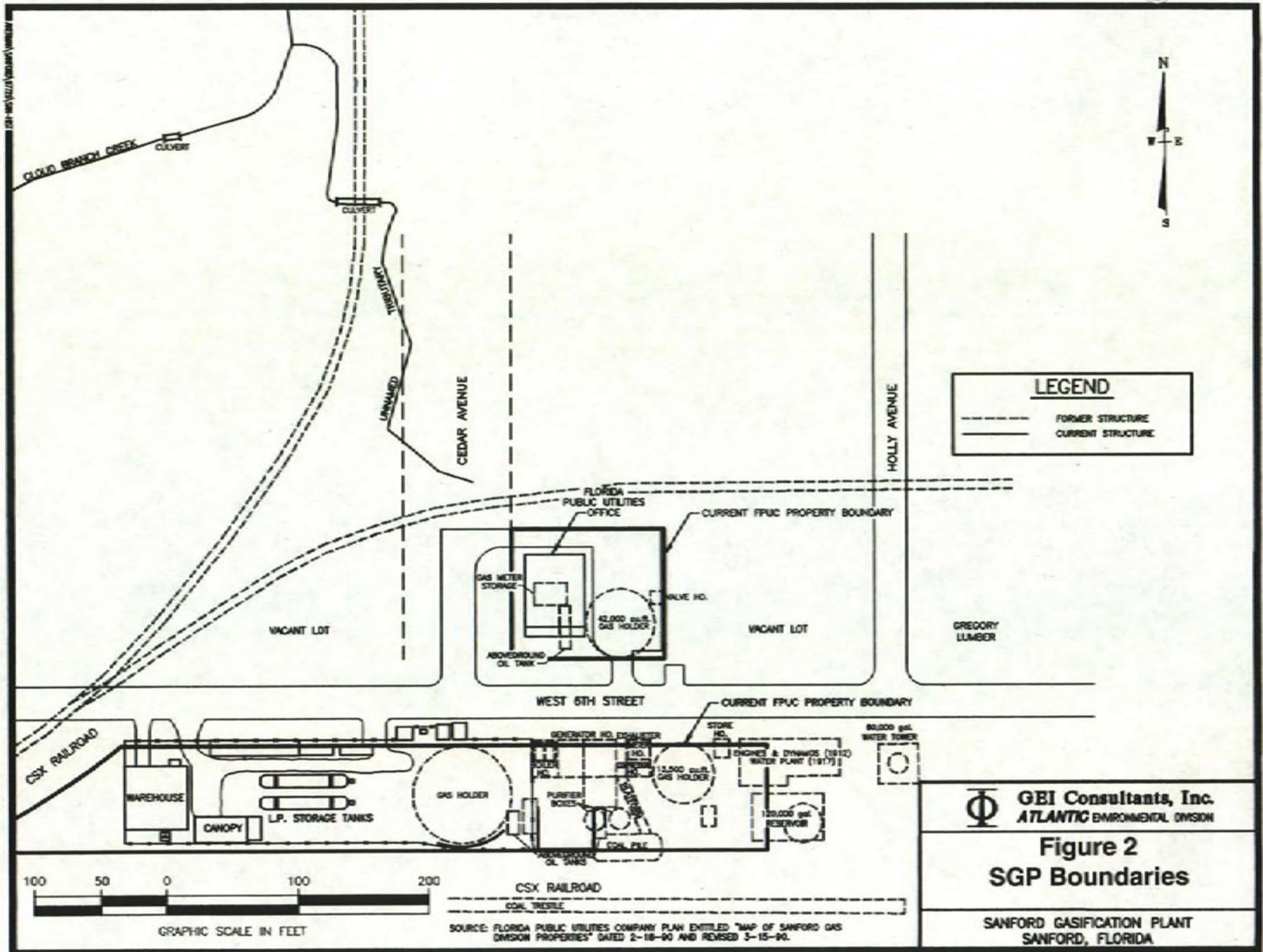
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SAVED: 9/11/2006 2:58 PM LAYOUT: A_BEL PAGESETUP: PDF-AP PENTABLE: PLTULL.CTB PRINTED: 9/11/2006 2:59 PM BY: RICHARDS



SOURCE: USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE: SANFORD (1965, PHOTOREVISED: 1988), SEMINOLE COUNTY, FL., SECTION: 39, TOWNSHIP: 19S, RANGE: 30E



SANFORD GASIFICATION PLANT SANFORD, FLORIDA	
SITE LOCATION MAP	
 an ARCADIS company	FIGURE 1



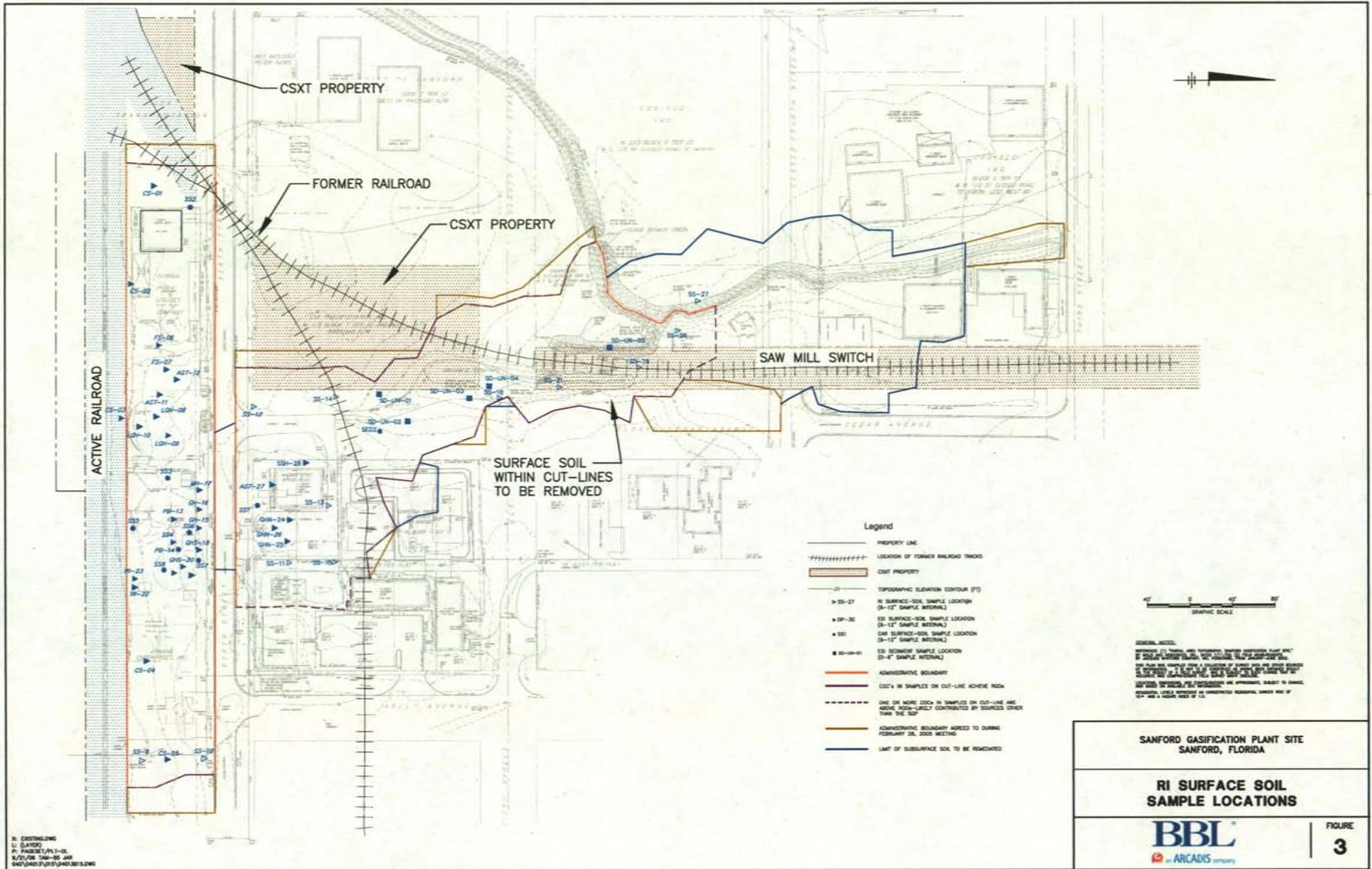
LEGEND

--- FORMER STRUCTURE
 ——— CURRENT STRUCTURE

GBI Consultants, Inc.
 ATLANTIC ENVIRONMENTAL DIVISION

Figure 2
SGP Boundaries

SANFORD GASIFICATION PLANT
 SANFORD, FLORIDA



R. CHRISTENSEN
 L. SANDER
 P. FASSETT/PLT-03
 8/27/08 TAP-05 JOB
 SANFORD GASIFICATION PLANT

GENERAL NOTES:
 1. THESE ARE PRELIMINARY SAMPLE LOCATIONS. THE ACTUAL LOCATION OF SAMPLES WILL BE DETERMINED BY THE FIELD SUPERVISOR.
 2. THE LOCATION OF SAMPLES WILL BE DETERMINED BY THE FIELD SUPERVISOR.
 3. THE LOCATION OF SAMPLES WILL BE DETERMINED BY THE FIELD SUPERVISOR.
 4. THE LOCATION OF SAMPLES WILL BE DETERMINED BY THE FIELD SUPERVISOR.
 5. THE LOCATION OF SAMPLES WILL BE DETERMINED BY THE FIELD SUPERVISOR.

SANFORD GASIFICATION PLANT SITE SANFORD, FLORIDA	
RI SURFACE SOIL SAMPLE LOCATIONS	
 an ARCADIS company	FIGURE 3



— Legend —

- DSAP SURFACE—SOIL SAMPLE LOCATIONS
- RI SURFACE SOIL SAMPLE LOCATIONS

SOURCE: USGS AERIAL PHOTOGRAPH, SANFORD, FLORIDA
DECEMBER 2, 1999.



Jacques Whitford Company, Inc.



JACQUES WHITFORD LOCATION: TAMPA, FLORIDA				
DATE PREPARED: 10/30/02	DESIGNED BY: CAV	DRAWN BY: CLN	CHECKED BY: BSB	REVIEWED BY: CAV
REVISION DATE:	REVISION NO:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
PROJECT NAME/FILE NAME: SANFORD/OFFSITE		PROJECT NUMBER/PHASE: FLT02102/1	SCALE:	PREPARED FOR: SANFORD P.R.P. GROUP

DRAWING TITLE:
OFF-SITE SURFACE—SOIL
SAMPLE LOCATIONS
SANFORD GASIFICATION PLANT SITE
SANFORD, FLORIDA

FIGURE NO. **6**

Figure 7
EPA Background/Control
Sample Locations
August/October 2003

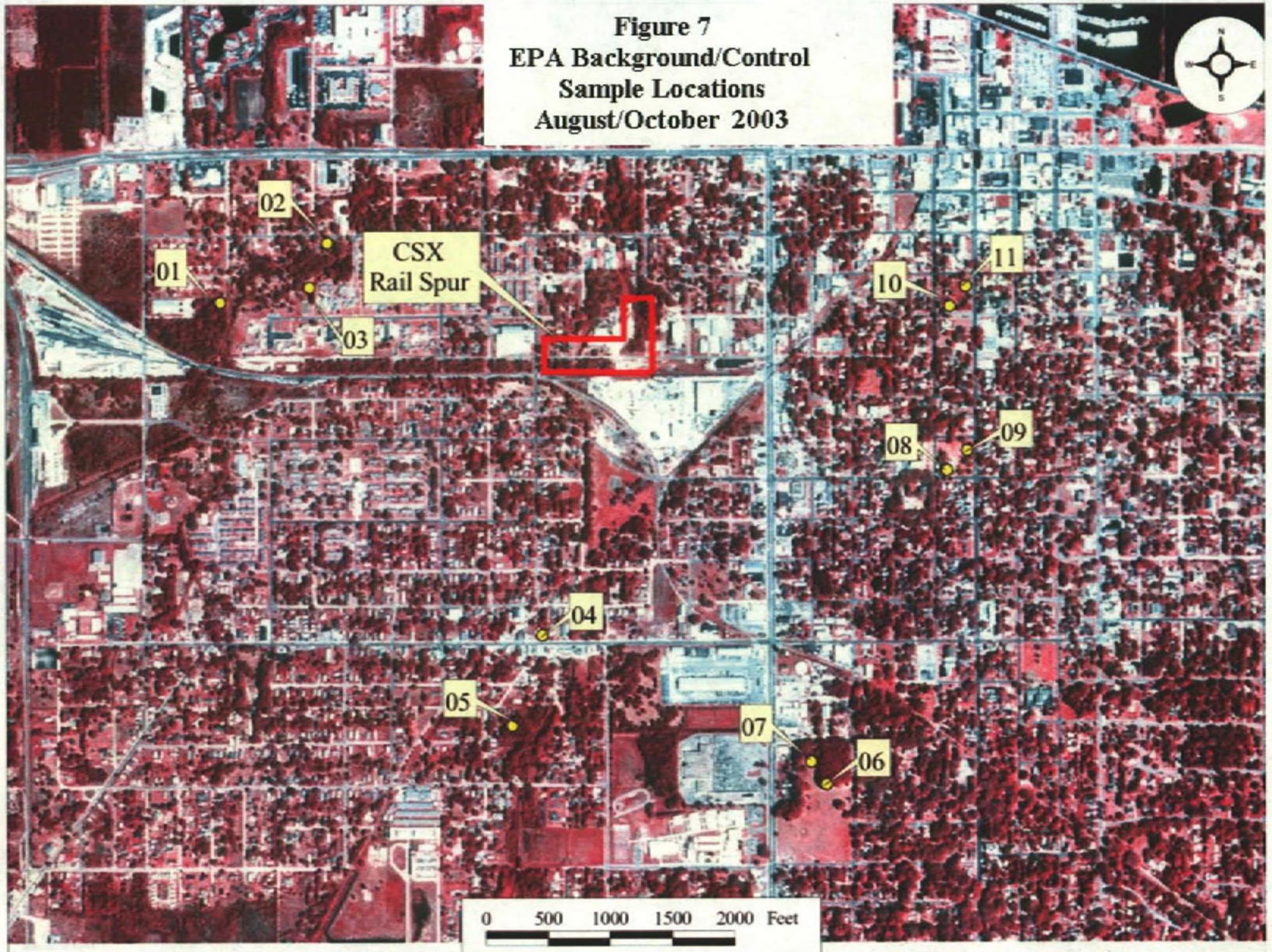
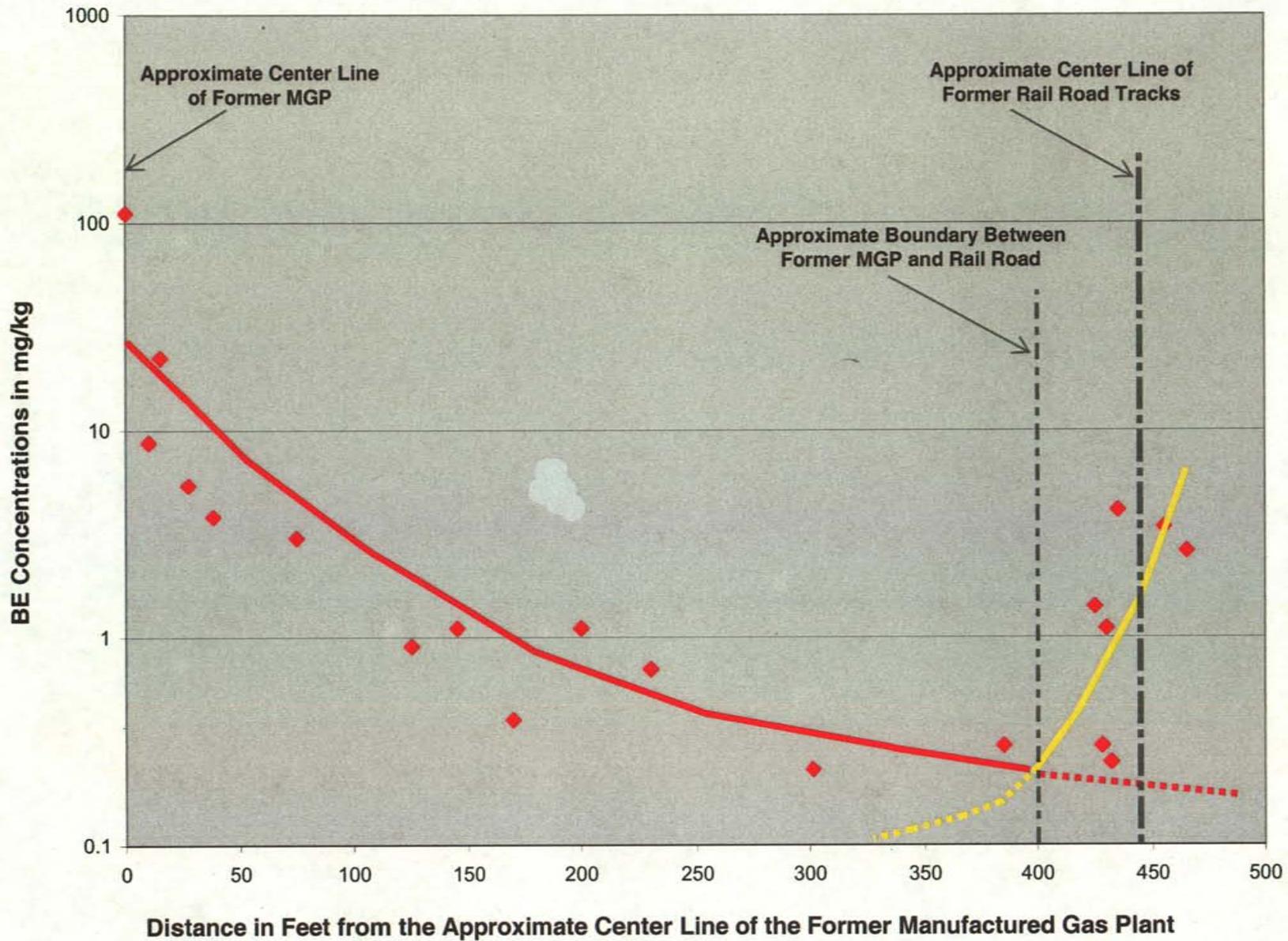
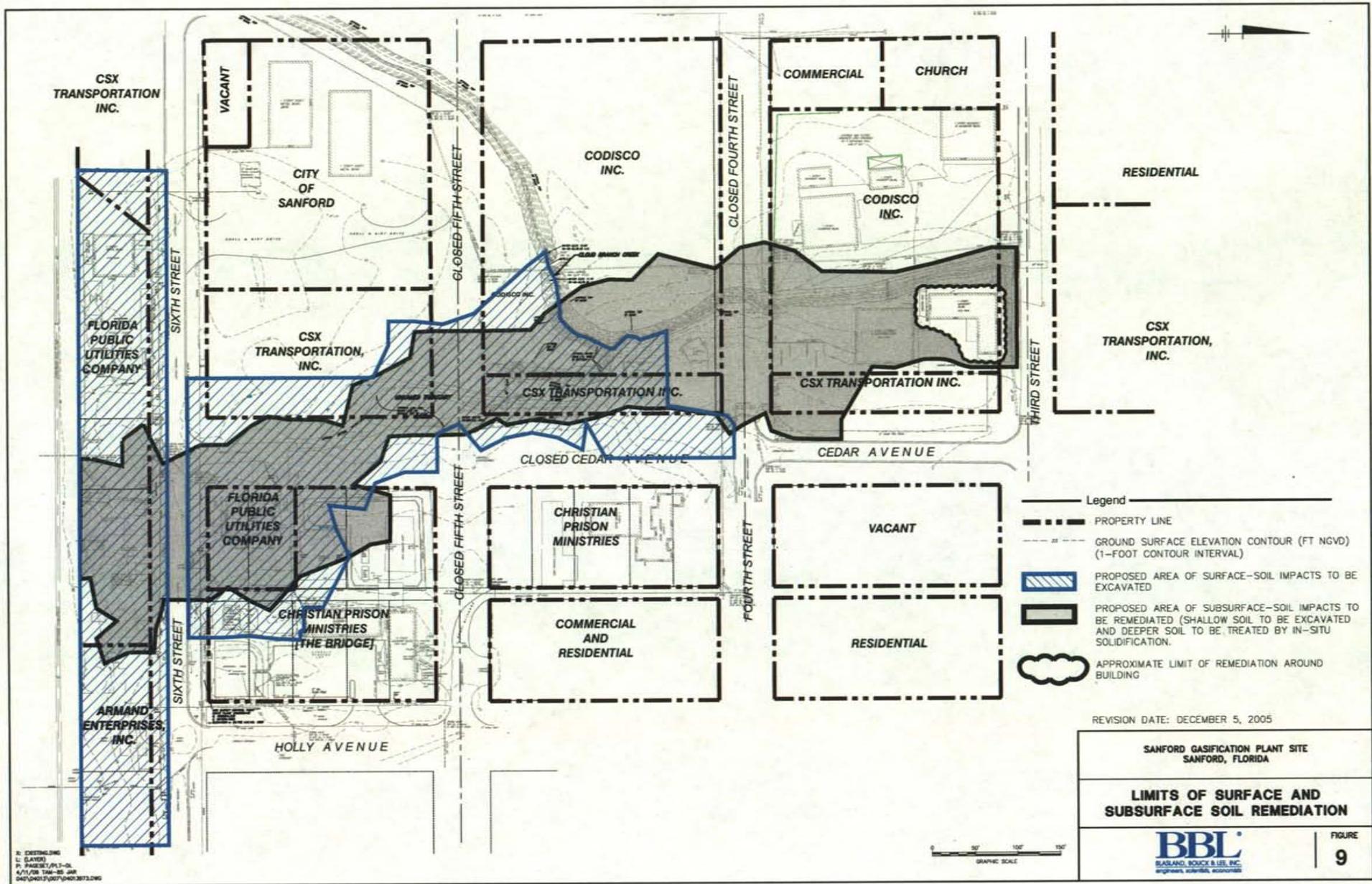


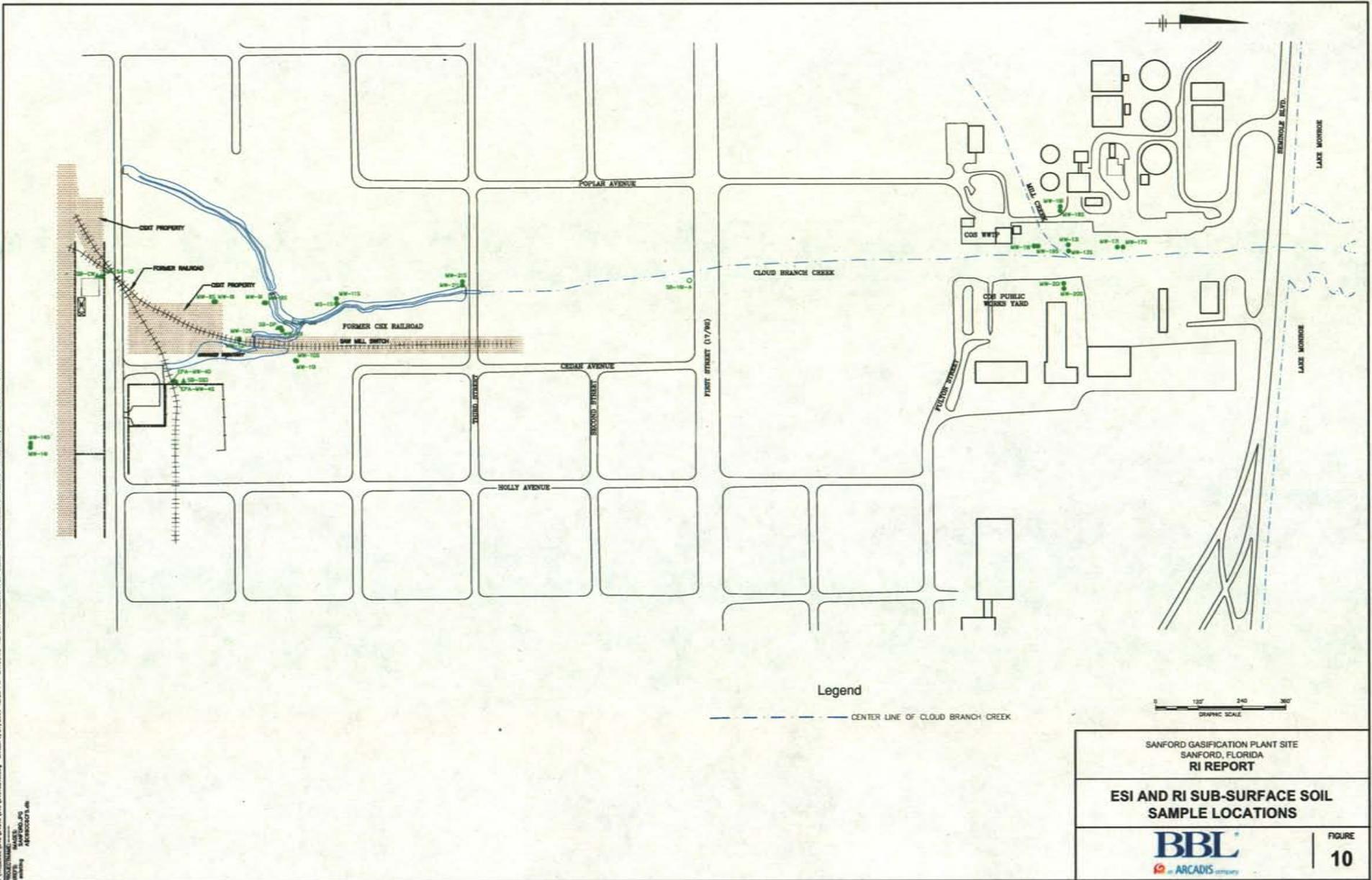
Figure 8

Generalized Concentration Gradient Sanford Gasification Plant Site





SANFORD GASIFICATION PLANT SITE
 SANFORD, FLORIDA
 RI REPORT
 ESI AND RI SUB-SURFACE SOIL
 SAMPLE LOCATIONS
 DATE: 4/27/2008 10:38 PM
 LAYOUT: REPORT
 PAPER: PFP-CLM-104
 PLOT: PFP-CLM-104-104
 PRINTED: 4/27/2008 10:37 PM
 BY: JAW
 PROJECT: SANFORD GASIFICATION PLANT
 DRAWING: RI REPORT
 SHEET: 10 OF 10
 ARCADIS



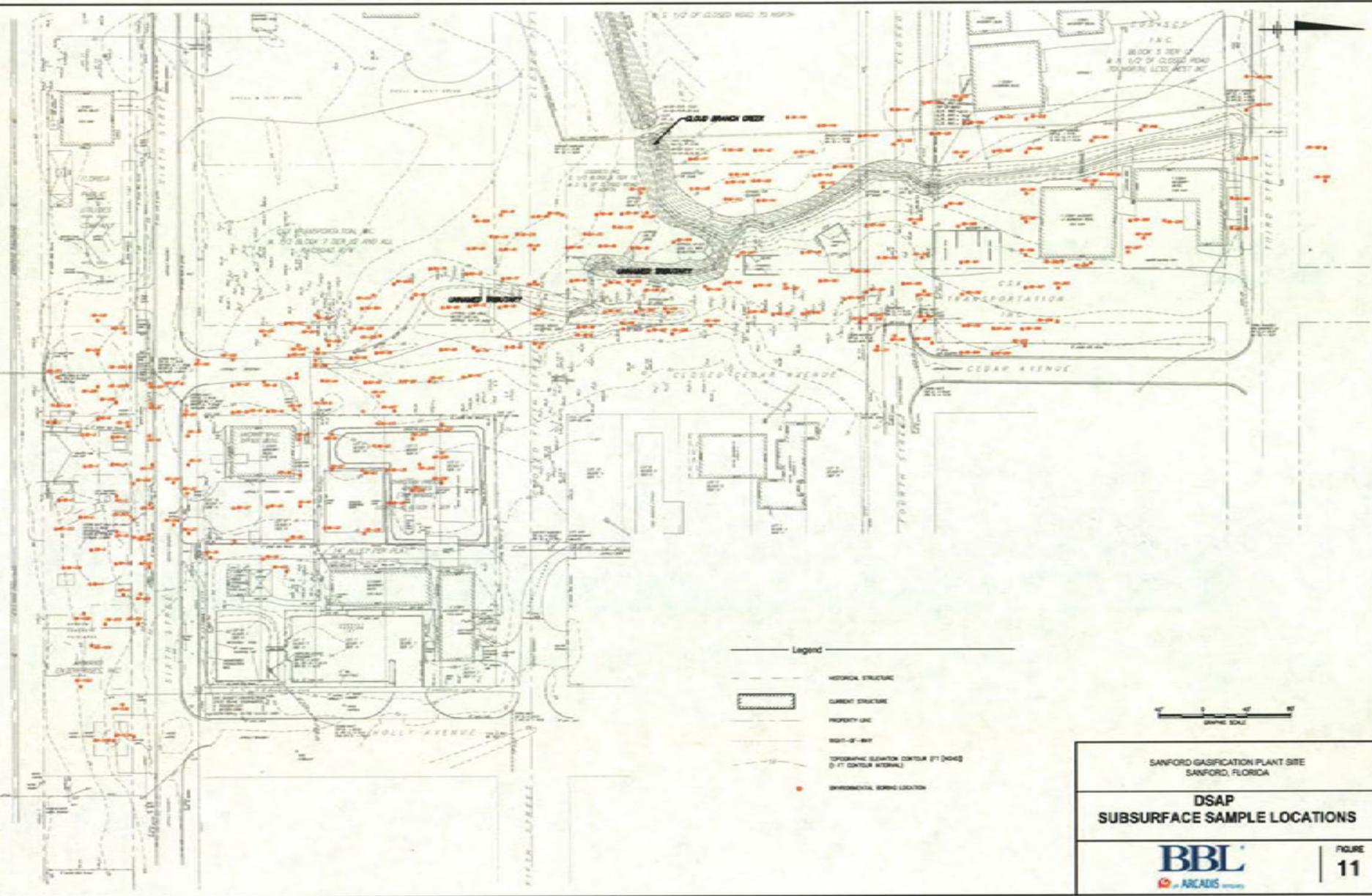
Legend

--- CENTER LINE OF CLOUD BRANCH CREEK

SANFORD GASIFICATION PLANT SITE SANFORD, FLORIDA RI REPORT	
ESI AND RI SUB-SURFACE SOIL SAMPLE LOCATIONS	
 	FIGURE 10

SCALE: 1" = 200' (VERTICAL SCALE: 1" = 10')

DATE: 12/20/2008 8:17 PM
PROJECT: SANFORD GASIFICATION PLANT SITE
DRAWING: DSAP SUBSURFACE SAMPLE LOCATIONS



SANFORD GASIFICATION PLANT SITE
SANFORD, FLORIDA

**DSAP
SUBSURFACE SAMPLE LOCATIONS**

BBL
by ARCADIS

FIGURE
11

TABLE 1: CONTAMINANTS OF POTENTIAL CONCERN IN SURFACE SOIL*

CONTAMINANT	FREQUENCY OF DETECTION	RANGE OF DETECTED CONCENTRATIONS (mg/kg)
Acenaphthene	13/64	0.059 - 1.000
Acenaphthylene	43/73	0.044 - 400
Aluminum	43/44	430 - 9.500
Antimony	13/37	0.77 - 10
Arsenic	53/70	0.51 - 89
Barium	53/70	7 - 3.500
Benzene	1/6	0.12
Benzo(a)anthracene	56/73	0.17 - 770
Benzo(a)pyrene	60/73	0.23 - 460
Benzo(b and/or K)fluoranthene	43/45	0.056 - 660
Benzo(b)fluoranthene	20/28	0.22 - 77
Benzo(k)fluoranthene	19/28	0.21 - 18
Cadmium	17/70	0.8 - 28
Chromium	69/70	1 - 58
Chrysene	60/73	0.042 - 630
Copper	59/70	3.3 - 740
Cyanide	27/70	0.1 - 2.400
Dibenzo(a,h)anthracene	30/64	0.054 - 45
Dibenzofuran	11/56	0.066 - 222
Dieldrin	8/29	0.00031-0.26
Fluoranthene	64/73	0.037 - 1.800
Fluorene	22/64	0.061 - 1.400
Indeno(1,2,3-c,d)pyrene	55/73	0.12 - 120
Iron	70/70	420 - 130.000
Lead	70/70	2 - 3.000
Manganese	70/70	2.8 - 1.000
Mercury	36/70	0.015 - 1.6
Methylnaphthalene, 1-	5/36	0.47 - 810
Methylnaphthalene, 2-	20/73	0.043 - 1.300
Naphthalene	18/73	0.04 - 1.200
Phenanthrene	57/73	0.039 - 4.200
Pyrene	67/73	0.05 - 2.700
Vanadium	39/44	1.3 - 54
Zinc	63/70	9.8 - 5.100

* Based on RI data

Table 2
Off-Site Surface-Soil Sample Results
Sanford Gasification Plant Site

Parameter	Cleanup Level	Sample ID/Depth (inches)								
		RD-BGSS-1		RD-BGSS-2		RD-BGSS-3		RD-BGSS-4		DUP of BGSS-4
		(0-6)	(18-24)	(0-6)	(18-24)	(0-6)	(18-24)	(0-6)	(18-24)	(0-6)
Polycyclic Aromatic Hydrocarbons (mg/kg)										
Naphthalene	3	0.0033 UJ	0.0033 UJ	0.02 J	0.0033 UJ	0.28 J	0.32 J	0.19 J	0.14 J	0.14 J
Acenaphthylene	NE	0.0033 U	0.0033 U	0.11	0.0033 U	0.41	0.5	0.13	0.016	0.14
1-Methylnaphthalene	NE	0.0033 U	0.0033 U	0.022	0.0033 U	0.65	0.6	0.25	0.23	0.22
2-Methylnaphthalene	200	0.0033 U	0.0033 U	0.03	0.0033 U	0.65	0.65	0.26	0.25	0.21
Acenaphthene	NE	0.0033 U	0.0033 U	0.017 U	0.0033 U	0.084 U	0.084 U	0.017 U	0.0033 U	0.017 U
Fluorene	3,000	0.0033 U	0.0033 U	0.017 U	0.0033 U	0.12	0.12	0.017 U	0.0073	0.017 U
Phenanthrene	1,500	0.014	0.0033 U	0.23	0.0033 U	3.2	2.8	0.26	0.21	0.22
Anthracene	NE	0.0056	0.0033 U	0.11	0.0033 U	0.7	0.7	0.16	0.22	0.17
Fluoranthene	3,000	0.058	0.0033 U	0.48	0.0063	7.0	6.0	0.27	0.082	0.23
Pyrene	15,000	0.047	0.0033 U	0.52	0.0073	6.0	5.0	0.3	0.089	0.28
Benz(a)anthracene	1.4	0.022	0.0033 U	0.38	0.004	3.5	3.2	0.23	0.074	0.18
Chrysene	143	0.08	0.0033 U	0.43	0.0043	5.5	5.5	0.39	0.12	0.32
Benzo(b)fluoranthene	1.4	0.11	0.004	0.45	0.005	6	6	0.6	0.15	0.58
Benzo(k)fluoranthene	14	0.054	0.0033 U	0.25	0.0033 U	3.4	3.2	0.29	0.064	0.3
Benzo(a)pyrene	0.14	0.05	0.004	0.41	0.0046	4.7	4.6	0.36	0.097	0.35
Dibenz(a,h)anthracene	0.14	0.016	0.0033 U	0.065	0.0033 U	1.0	1.0	0.12	0.03	0.072
Benzo(g,h,i)perylene	NE	0.07	0.0036	0.18	0.0063	3	2.8	0.24	0.11	0.16
Indeno(1,2,3-cd)pyrene	1.4	0.068	0.0033 U	0.18	0.0033	2.9	2.8	0.23	0.093	0.16
Dibenzofuran	300	0.0033 U	0.0033 U	0.017 U	0.0033 U	0.22	0.22	0.08	0.075	0.068
Inorganics (mg/kg)										
Antimony	26	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.4	2.0 U	3.4	2.0 U
Arsenic	23	0.5 U	0.6 U	5.5	0.7	0.78	48	0.91 J	76	2.1 J
Iron	23,000	96 J	250 J	3,200 J	410 J	2,000 J	9,600 J	1,800 J	9,000 J	18,000 J
Percent Solids	NA	92	83	87	85	93	87	90	84	91

Table 2 (continued)
Off-Site Surface-Soil Sample Results
Sanford Gasification Plant Site

Parameter	Cleanup Level	Sample ID/Depth (inches)									
		RD-BGSS-5		RD-BGSS-6		RD-BGSS-7		RD-BGSS-8		RD-BGSS-9	
		(0-6)	(18-24)	(0-6)	(18-24)	(0-6)	(18-24)	(0-6)	(18-24)	(0-6)	(18-24)
Polycyclic Aromatic Hydrocarbons (mg/kg)											
Naphthalene	3	0.033 UJ	0.017 UJ	0.067 UJ	0.05 J	0.24 J	0.0033 UJ	0.0067 UJ	0.0033 UJ	0.017 UJ	0.0066 UJ
Acenaphthylene	NE	0.046	0.017 U	0.086	0.073	0.6	0.0033 U	0.0087	0.0033 U	0.02	0.013
1-Methylnaphthalene	NE	0.033 U	0.017 U	0.067 U	0.047	0.38	0.0036	0.0067 U	0.0033 U	0.017 U	0.0066
2-Methylnaphthalene	200	0.033 U	0.017 U	0.086	0.09	0.38	0.0033	0.0067 U	0.0033 U	0.017 U	0.0066 U
Acenaphthene	NE	0.033 U	0.017 U	0.067 U	0.033 U	0.033 U	0.0033 U	0.0067 U	0.0033 U	0.017 U	0.0066 U
Fluorene	3,000	0.033 U	0.017 U	0.067 U	0.033 U	0.033 U	0.0033 U	0.0067 U	0.0033 U	0.017 U	0.0066 U
Phenanthrene	1,500	0.066	0.017 U	0.62	0.096	1.5	0.01	0.058	0.0033 U	0.017	0.02
Anthracene	NE	0.033 U	0.017 U	0.22	0.04	0.44	0.0033 U	0.011	0.0033 U	0.02	0.018
Fluoranthene	3,000	0.14	0.033	1.4	0.14	2.0	0.016	0.17	0.011	0.058	0.056
Pyrene	15,000	0.16	0.032	1.2	0.14	1.9	0.016	0.14	0.0099	0.06	0.054
Benz(a)anthracene	1.4	0.11	0.022	0.9	0.08	1.0	0.0079	0.069	0.004	0.035	0.038
Chrysene	143	0.12	0.022	1.1	0.1	1.7	0.012	0.12	0.0063	0.042	0.048
Benzo(b)fluoranthene	1.4	0.17	0.035	1.5	0.15	1.8	0.015	0.18	0.0096	0.075	0.08
Benzo(k)fluoranthene	14	0.084	0.017	0.94	0.086	1.2	0.0076	0.078	0.004	0.035	0.036
Benzo(a)pyrene	0.14	0.14	0.03	1.2	0.11	1.5	0.01	0.12	0.0056	0.053	0.054
Dibenz(a,h)anthracene	0.14	0.034 U	0.017 U	0.19	0.033 U	0.32	0.0033	0.024	0.0033 U	0.017 U	0.0092
Benzo(g,h,i)perylene	NE	0.076	0.025	0.58	0.12	0.72	0.012	0.059	0.0056	0.028	0.022
Indeno(1,2,3-cd)pyrene	1.4	0.056	0.018	0.46	0.043	0.68	0.0086	0.06	0.0043	0.025	0.02
Dibenzofuran	300	0.033 U	0.017 U	0.067 U	0.033 U	0.18	0.0033 U	0.0067 U	0.0033 U	0.017 U	0.0066 U
Inorganics (mg/kg)											
Antimony	26	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.0 U	2.0 U	2.0 U	2.0 U
Arsenic	23	16	2.8 U	1.3	18	0.5 U	2.7	0.92	5.0	1.0	0.5 U
Iron	23,000	3,100 J	24,000 J	2,200 J	3,600 J	3,000 J	980 J	250 J	2,800 J	3,700 J	1,000 J
Percent Solids	NA	88	90	92	91	91	97	67	79	92	91

Notes:

NE = Cleanup Level has not been established

U = non-detect at the detection limit provided

J = estimated value

Bold/Shading indicates that analytical result exceeds the Cleanup Level

Table 3

27 Highest Arsenic Concentrations

Sanford Gasification Plant site
Sanford, Florida

Rank	Arsenic (mg/kg)	Sample ID
1	130	RD-SS-34(18-24)
2	120	CSX-008-SS
3	100	RD-SS-39A(0-6)
4	89	CS-02
5	87	CSX-011-SS
6	76	RD-BGSS-4(18-24)*
7	58	RD-SS-25(0-6)
8	55	XRF14-SB
9	55	XRF7-SB
10	48	RD-BGSS-3(18-24)*
11	44	RD-SS-31(18-24)
12	43	SS-26
13	42	SS-05
14	39	CS-03
15	37	RD-SS-27A(18-24)
16	37	RD-SS-42A(0-6)
17	35	CSX-013-SD
18	35	RD-SS-26A(18-24)
19	34	CSX-013-SS
20	34	RD-SS-32(18-24)
21	32	TR-23
22	26	XRF-10-SS
23	25	DUP of RD-SS-42A(0-6)
24	24	SS-14
25	22	CSX-005-SB
26	21	DUP of RD-SS-39(0-6)
27	20	RD-SS-39(0-6)

Note:

* =

Reference samples collected along former railroad right of way 500 to 1000 ft upgradient of site (not shown on Figure 1).

TABLE 4
SUMMARY EXTRACTABLE ORGANICS ANALYTICAL RESULTS
– POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) –
CONTROL/BACKGROUND SAMPLES
Sanford, Seminole County, Florida
August 2003

Compound	Clean Up Goals mg/kg	CSX-030-SS Control 1 mg/kg	CSX-032-SS Control 2 mg/kg	CSX-033-SS Control 3 mg/kg	CSX-042-SS Control 4 mg/kg	CSX-043-SS Control 5 mg/kg	CSX-044-SS Control 6 mg/kg	CSX-045-SS Control 7 mg/kg	CSX-051-SS Control 8 mg/kg	CSX-052-SS Control 9 mg/kg	CSX-053-SS Control 10 mg/kg	CSX-054-SS Control 11 mg/kg
2-Methylnaphthalene	200	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)Anthracene	1.4	-	-	-	0.06 J	-	-	-	-	-	0.046 J	0.039 J
Benzo(b)Fluoranthene	0.14	-	0.092 J	0.055 J	0.10 J	0.04	-	-	0.054 J	0.055 J	0.078 J	0.076 J
Benzo(b and/or k)Fluoranthene	1.4	NA	NA									
Benzo(k)Fluoranthene	14	-	0.062 J	0.045 J	0.074 J	-	-	-	0.042 J	-	0.064 J	0.066 J
Benzo-a-Pyrene	0.14	-	0.048 J	0.040 J	0.081 J	-	-	-	0.041 J	-	0.064 J	0.051 J
Chrysene	143	-	0.055 J	0.045 J	0.083 J	-	-	-	0.041 J	0.041 J	0.064 J	0.058 J
Dibenzo(a,h)Anthracene	0.14	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	3,000	-	0.054 J	0.059 J	0.11	-	-	-	0.052 J	0.052 J	-	0.062 J
Indeno (1,2,3-cd) Pyrene	1.4	-	-	-	0.048 J	-	-	-	-	-	-	-
Phenanthrene	1,500	-	-	-	0.042 J	-	-	-	-	-	-	-
Pyrene	15,000	-	0.07	0.06	0.12 J	-	-	-	0.055 J	0.059 J	0.086 J	0.074 J

Data Qualifiers:

J-Identification of analyte is acceptable; reported value is an estimate.

-- Analyte not detected at or above reporting limit.

NA - Not Analyzed

TABLE 5
SUMMARY INORGANIC ANALYSIS RESULTS
CONTROL/BACKGROUND RE-SAMPLING*
SANFORD, FLORIDA
OCTOBER 2003

Station ID	Arsenic mg/kg	Lead mg/kg
CS-001-SF	0.3	8.03
CS-002-SF	0.4	13.7
CS-003-SF	0.7	5.99
CS-004-SF	1.2	76.1
CS-005-SF	1.7	96.1
CS-006-SF	0.2	11.4
CS-007-SF	0.2	18.9
CS-008-SF	0.3	15.3
CS-009-SF	0.4	30.3
CS-010-SF	0.3	29.2
CS-011-SF	0.3	27.7
CS-011-SFD	0.4	38.5

Notes:

*-- Samples were recollected due to the first laboratory not achieving low level arsenic analysis.

TABLE 6: CONTAMINANTS OF POTENTIAL CONCERN IN SUBSURFACE SOIL*

CONTAMINANT	FREQUENCY OF DETECTION	RANGE OF DETECTED CONCENTRATIONS (mg/kg)
Arsenic	11 /24	0.8 - 23
Benzo(a)anthracene	11/26	0.084 - 28
Benzo(a)pyrene	10/26	0.078 - 20
Benzo(b and/or k)fluoranthene	4/12	0.16 - 17
Benzo(b)fluoranthene	6/14	0.63 - 14
Dibenzo(a,h)anthracene	6/26	0.22 - 6.2
Indeno(1,2,3-c,d)pyrene	11/26	0.0072 - 15
Iron	24/24	0.94 - 130,000
Lead	21/24	0.0039 - 3,500
Methyl-4,5-dinitrophenol	1/2	21
Nitroaniline,4-	1/2	21

* Based on RI data

TABLE 7 : CONTAMINANTS OF CONCERN IN SURFACE SOIL

CONTAMINANT	FREQUENCY OF DETECTION	RANGE OF DETECTED CONCENTRATIONS (mg/kg)
Antimony	13/37	0.77 - 10
Arsenic	53/70	0.51 - 89
Benzo(a)anthracene	56/73	0.17 - 770
Benzo(a)pyrene	60/73	0.23 - 460
Benzo(b and/or k)fluoranthene	43/45	0.056 - 660
Benzo(b)fluoranthene	20/28	0.22 - 77
Benzo(k)fluoranthene	19/28	0.21 - 18
Chrysene	60/73	0.042 - 630
Dibenzo(a,h)anthracene	30/64	0.054 - 45
Dibenzofuran	11/56	0.066 - 222
Fluoranthene	64/73	0.037 - 1,800
Fluorene	22/64	0.061 - 1,400
Indeno(1,2,3-c,d)pyrene	55/73	0.12 - 120
Iron	70/70	420 - 130,000
Methylnaphthalene,2-	20/73	0.043 - 1,300
Naphthalene	18/73	0.04 - 1,200
Phenanthrene	57/73	0.039 - 4,200
Pyrene	67/73	0.05 - 2,700

TABLE 8: CONTAMINANTS OF CONCERN IN SUBSURFACE SOIL

Based on Risk Assessment		
CONTAMINANT	FREQUENCY OF DETECTION	RANGE OF DETECTED CONCENTRATIONS (mg/kg)
Arsenic	11/24	0.8 - 23
Benzo(a)anthracene	11/26	0.084 - 28
Benzo(a)pyrene	10/26	0.078 - 20
Benzo(b and/or k)fluoranthene	4/12	0.16 - 17
Benzo(b)fluoranthene	6/14	0.63 - 14
Indeno(1,2,3-c,d)pyrene	11/26	0.0072 - 15
Iron	24/24	0.94 - 130,000
Lead	21/24	0.0039 - 3,500
Based on Groundwater** Protection		
Benzene	4/18	0.0021 - 1.4
Naphthalene	18/26	0.001 - 930
Ethylbenzene	9/20	0.0017 - 80
Total Xylenes	8/33	0.002 - 67

**These contaminants were determined to be COCs to the subsurface soil contamination based on a memo prepared by Bill O'Steen of the EPA Office of Technical Services and is part of the OUI FS Addendum and can be found in the AR.

TABLE 9: POTENTIAL EXPOSURE PATHWAYS

Media	Scenario	Receptor
Surface Soil	Current	Commercial Worker (on-site/off-site) Trespasser/Visitor (on/off-site)
Surface Soil	Future	Construction Worker (on/off-site) Child, Resident (on/off-site) Adult, Resident (on/off-site) Aggregate resident (on/off-site)
Subsurface Soil	Current	None
Subsurface Soil	Future	Construction Worker (on/off-site)
Sediment	Current	Adolescent Trespasser (off-site)
Sediment	Future	Construction Worker (off-site)
Groundwater	Current	None
Groundwater	Future	Construction Worker (on/off-site) Irrigation/maintenance Worker (on/off-site)
Surface Water	Current	Adolescent Trespasser/Visitor (off-site)
Surface Water	Future	None

TABLE 10: ON-SITE EXPOSURE POINT CONCENTRATIONS IN SURFACE SOIL

CONTAMINANT	EPC Value (mg/kg)	Max. or 95% UCL
Acenaphthene	6.2	95% UCL
Aluminum	3,975	95% UCL
Antimony	1.9	95% UCL
Arsenic	17	95% UCL
Barium	192	95% UCL
Benzo(a) anthracene	26	95% UCL
Benzo(a)pyrene	28	95% UCL
Benzo(b and/or k)fluoranthene	98	95% UCL
Benzo(b)fluoranthene	17	Maximum
Benzo(k)fluoranthene	16	Maximum
Cadmium	24	95% UCL
Chromium	17	95% UCL
Chrysene	35	95% UCL
Copper	62	95% UCL
Cyanide	695	95% UCL
Dibenzo(a,h)anthracene	3.5	95% UCL
Dieldrin	0.035	95% UCL
Indeno(1,2,3-c,d)pyrene	9.4	95% UCL
Iron	16,782	95% UCL
Lead	218	95% UCL
Manganese	206	95% UCL
Mercury	0.27	95% UCL
Methylnaphthalene, 1-	48	95% UCL
Methylnaphthalene, 2-	6.0	95% UCL
Naphthalene	4.8	95% UCL
Pyrene	108	95% UCL
Vanadium	10	95% UCL
Zinc	517	95% UCL

TABLE 11: OFF-SITE EXPOSURE POINT CONCENTRATIONS IN SURFACE SOIL

CONTAMINANT	EPC Value (mg/kg)	Max. or 95% UCL
Acenaphthene	600	95% UCL
Acenaphthylene	68	95% UCL
Antimony	10	Maximum
Arsenic	17	95% UCL
Barium	130	95% UCL
Benzene	0.12	Maximum
Benzo(a) anthracene	417	95% UCL
Benzo(a)pyrene	449	95% UCL
Benzo(b and/or k)fluoranthene	660	Maximum
Benzo(h)fluoranthene	68	95% UCL
Benzo(k)fluoranthene	18	Maximum
Cadmium	2.2	95% UCL
Chromium	13	95% UCL
Chrysene	407	95% UCL
Copper	250	95% UCL
Dibenzo(a,h)anthracene	6.8	95% UCL
Dibenzofuran	189	95% UCL
Fluoranthene	1,737	95% UCL
Fluorene	400	95% UCL
Indeno(1,2,3-c,d)pyrene	78	95% UCL
Iron	28,745	95% UCL
Lead	670	95% UCL
Manganese	311	95% UCL
Methylnaphthalene, 1-	11	95% UCL
Methylnaphthalene, 2-	700	95% UCL
Naphthalene	243	95% UCL
Phenanthrene	1,889	95% UCL
Pyrene	2,700	95% UCL
Vanadium	54	Maximum
Zinc	808	95% UCL

TABLE 12: ON-SITE EXPOSURE POINT CONCENTRATION IN SUBSURFACE SOIL

CONTAMINANT	EPC Value (mg/kg)	Max. or 95% UCL
Benzo(a)pyrene	3.8	Maximum
Dibenzo(a,h)anthracene	1.1	Maximum

TABLE 13: OFF-SITE EXPOSURE POINT CONCENTRATION IN SUBSURFACE SOIL

CONTAMINANT	EPC Value (mg/kg)	Max. or 95% UCL
Arsenic	23	Maximum
Benzo(a) anthracene	28	Maximum
Benzo(a)pyrene	20	Maximum
Benzo(b and/or k)fluoranthene	17	Maximum
Benzo(b)fluoranthene	12	95% UCL
Dibenzo(a,h)anthracene	6.2	Maximum
Indeno(1,2,3-c,d)pyrene	15	Maximum
Iron	130,000	Maximum
Lead	3,500	Maximum
Methyl-4,6-dinitrophenol,2-	21	Maximum
Nitroaniline,4-	21	Maximum

TABLE 14: REMEDIAL CLEANUP GOALS FOR CONTAMINANTS OF CONCERN

Media: Surface Soil (upper 2 feet)			
Chemical of Concern	Cleanup Level (mg/kg)	Basis of Cleanup Level	Risk Hazard Level
Antimony	26	Risk Assessment	Hazard Index = 1
Arsenic***	2.1	RBCA*	Hazard Index = 1
Benzo(a)anthracene	1.4	Risk Assessment	1 x 10 ⁻⁶
Benzo(a)pyrene	0.14	Risk Assessment	1 x 10 ⁻⁶
Benzo(b and/or k)fluoranthene	1.4	Risk Assessment	1 x 10 ⁻⁶
Benzo(b)fluoranthene	1.4	Risk Assessment	1 x 10 ⁻⁶
Benzo(k)fluoranthene	14	Risk Assessment	1 x 10 ⁻⁶
Chrysene	143	Risk Assessment	1 x 10 ⁻⁶
Chemical of Concern	Cleanup Level (mg/kg)	Basis of Cleanup Level	Risk Hazard Level
Dibenzo(a,h)anthracene	0.14	Risk Assessment	1 x 10 ⁻⁶
Dibenzofuran	300	Risk Assessment	Hazard Index = 1
Fluoranthene	3,000	Risk Assessment	Hazard Index = 1
Fluorene	3,000	Risk Assessment	Hazard Index = 1
Indeno(1,2,3-c,d)pyrene	1.4	Risk Assessment	1 x 10 ⁻⁶
Iron	23,000	Risk Assessment	Hazard Index = 1
Methylnaphthalene,2-	200	Risk Assessment	Hazard Index = 1
Naphthalene**	3	Risk Assessment	Protection of Groundwater
Phenanthrene	1,500	Risk Assessment	Hazard Index = 1
Pyrene	15,000	Risk Assessment	Hazard Index = 1
Media: Subsurface Soil***			
Chemical of Concern	Cleanup Level (mg/kg)	Basis of Cleanup Level	Risk at Cleanup Level
Benzene	0.05	MCL	Protection of Groundwater
Naphthalene	3	Risk Assessment	Protection of Groundwater
Ethylbenzene	12	MCL	Protection of Groundwater
Total Xylenes	43	MCL	Protection of Groundwater

*FDEP's Risk Based Corrective Action

**Naphthalene cleanup number applies to both surface and subsurface soil.

***Subsurface soil remedial cleanup goals established in the OU2 groundwater ROD signed on June 12, 2001.

TABLE 1 5: ALTERNATIVE COST SUMMARY

	ALTERNATIVE	CAPITAL COST (\$)	ANNUAL O&M (\$)	PRESENT WORTH (\$)
1	No Action	15,000.00	22,000.00	351,000.00
2	Institutional and Engineering Controls	52,500.00	23,000.00	412,000.00
3	Vegetated Soil Cap and Drainage Improvements	594,100.00	25,000.00	979,000.00
4	Low-Permeability Cap and Drainage Improvements	950,300.00	25,000.00	1,300,000.00
5	Pumping and Treating Groundwater with Vegetative Cap	670,000.00	247,000.00	4,500,000.00
6	Low-Permeability Cap with Slurry Wall	3,500,000.00	84,000.00	4,800,000.00
7	Excavation and Landfill Disposal	14,900,000.00	19,500.00	15,200,000.00
8	Excavation and Off-Site Thermal Treatment	24,000,000.00	19,500.00	24,300,000.00
9	Excavation with Non-NAPL Impacts to Landfill and Blended NAPL Impacts to Off-Site Thermal Treatment	18,800,000.00	19,500.00	19,100,000.00
10	Excavation and On-Site Thermal Treatment	14,600,000.00	19,500.00	14,900,000.00
11	In-Situ Solidification/Stabilization and Off-Site Disposal	10,500,000.00	21,000.00	10,800,000.00
12	Excavation, Off-Site Landfilling, Off-Site Thermal Treatment of Shallow Soil and In-Situ Solidification/Stabilization of Deep Soil	11,300,000.00	21,000.00	11,600,000.00

**Table 16 - Institutional Controls Costs
Sanford Gasification Plant Site
Sanford, Florida**

Item	Unit Cost	Quantity	Total
CAPITAL COSTS			
ADMINISTRATION			
Deed restrictions/zoning control	\$30,000 ls	1	\$30,000
Administration Subtotal			\$30,000
SOIL REMEDIATION			
Monitoring well installation and development	\$3,000 well	4	\$12,000
Remediation Subtotal			\$12,000
CAPITAL COST TOTAL (with 25% contingency)			\$52,500
ANNUAL O&M COSTS			
GROUNDWATER MONITORING			
Groundwater analysis	\$500 well	17	\$8,500
Sampling and reporting labor	\$2,000 day	4	\$8,000
Expenses (travel, equipment rental, per diem)	\$1,000 ls	1	\$1,000
Groundwater Monitoring Subtotal (annual cost with 25% contingency)			\$21,875
ANNUAL INSPECTIONS			
Review and inspection of institutional controls	\$1,200 year	1	\$1,200
Annual Inspections Subtotal (annual cost with 25% contingency)			\$1,500
O&M Present Worth (30 years, 5% discount rate)			\$359,332
TOTAL PRESENT WORTH COST			\$411,832

General Assumptions:

- groundwater monitoring assumes a total of four groundwater monitoring wells would be installed and a total of 17 groundwater samples would be collected annually (including three quality assurance/quality control samples) and analyzed for groundwater COCs

**Table 17 - In-Situ Solidification/Stabilization Costs
Sanford Gasification Plant Site
Sanford, Florida**

Item	Unit Cost	Range of Units		Extended Total	
CAPITAL COSTS					
ADMINISTRATION					
Permitting, design, bidding, and procurement	\$300,000 ls	1.0	-	1.0	\$300,000 - \$300,000
Deed restrictions/zoning control	\$75,000 ls	1.0	-	1.0	\$75,000 - \$75,000
Oversight	\$3,000 day	216	-	234	\$647,400 - \$702,667
Administration Subtotal					\$1,022,400 - \$1,077,667
SOIL REMEDIATION					
Civil mobilization/demobilization	\$50,000 ls	1.0	-	1.0	\$50,000 - \$50,000
Solidification/stabilization mobilization/demobilization	\$400,000 ls	1.0	-	1.0	\$400,000 - \$400,000
Erosion controls	\$50,000 ls	1.0	-	1.0	\$50,000 - \$50,000
Clearing	\$15,000 ls	1.0	-	1.0	\$15,000 - \$15,000
Monitoring well modifications	\$25,000 ls	1.0	-	1.0	\$25,000 - \$25,000
Cloud Branch Creek diversion	\$50,000 ls	1.0	-	2.0	\$50,000 - \$100,000
Subsurface concrete/brick removal, decontamination, and disposal	\$50 ton	2,000	-	2,500	\$100,000 - \$125,000
Dewatering, treatment, and discharge	\$50,000 ls	1.0	-	1.5	\$50,000 - \$75,000
Excavation of surface soil	\$3 ton	24,153	-	24,153	\$72,459 - \$72,459
Excavation of impacted subsurface soil to account for bulking	\$6 ton	26,933	-	26,933	\$161,598 - \$161,598
Excavation of non-impacted soil overlying NAPL to account for bulking	\$6 ton	13,365	-	13,365	\$80,190 - \$80,190
Soil blending and homogenization	\$3 ton	46,631	-	46,631	\$139,893 - \$139,893
Landfilling of surface soil	\$28 ton	19,968	-	19,968	\$559,104 - \$559,104
Landfilling of impacted subsurface soil to account for bulking	\$28 ton	26,933	-	26,933	\$754,124 - \$754,124
Landfilling of non-impacted soil overlying NAPL to account for bulking	\$28 ton	17,820	-	17,820	\$498,960 - \$498,960
In-situ solidification/stabilization treatability bench scale study	\$75,000 ls	1.0	-	1.0	\$75,000 - \$75,000
In-situ solidification/stabilization treatability field pilot study	\$150,000 ls	1.0	-	1.0	\$150,000 - \$150,000
In-situ solidification/stabilization of impacted subsurface soil	\$42 cy	70,100	-	70,100	\$2,944,200 - \$2,944,200
In-situ solidification/stabilization of non-impacted soil overlying NAPL	\$42 cy	25,600	-	25,600	\$1,075,200 - \$1,075,200
Quality assurance/quality control testing	\$50,000 ls	1	-	1.2	\$50,000 - \$60,000
Earth support	\$25 sf	4,500	-	5,500	\$112,500 - \$137,500
Backfill (surface soil 6" to 24" bls)	\$15 ton	14,976	-	14,976	\$224,640 - \$224,640
Backfill (topsoil 0" to 6" bls)	\$18 ton	6,038	-	6,038	\$108,684 - \$108,684
Overhead utility relocation	\$250,000 ls	1.0	-	1.5	\$250,000 - \$375,000
Subsurface utility relocation and restoration	\$40,000 ls	1.0	-	1.5	\$40,000 - \$60,000
Paving and curbing	\$100 lf	200	-	300	\$20,000 - \$30,000
Odor and vapor control	\$500 day	191	-	209	\$95,400 - \$104,611
Air monitoring	\$2,500 day	206	-	224	\$514,500 - \$560,556
Structure modifications (relocation/demolition/restoration)	\$250,000 ls	1.0	-	1.3	\$250,000 - \$333,333
Site restoration	\$25,000 ls	1.0	-	1.0	\$25,000 - \$25,000
Monitoring well installation and development	\$3,000 well	8	-	10	\$24,000 - \$30,000
Remediation Subtotal					\$8,965,452 - \$9,400,052
CAPITAL COST TOTAL					\$9,987,852 - \$10,477,719
ANNUAL O&M COSTS					
GROUNDWATER MONITORING/INSPECTIONS					
Groundwater analysis	\$500 well	17	-	17	\$8,500 - \$8,500
Sampling and reporting labor	\$2,000 day	4	-	5	\$8,000 - \$10,000
Expenses (travel, equipment rental, per diem)	\$1,000 ls	1	-	1	\$1,000 - \$1,000
Site inspection and reporting	\$1,200 ls	1	-	1	\$1,200 - \$1,200
Groundwater Monitoring Subtotal (annual cost)					\$18,700 - \$20,700
O&M Present Worth (30 years, 5% discount rate)					\$287,466 - \$318,211
TOTAL PRESENT WORTH COST					\$10,275,318 - \$10,795,929
ALL-INCLUSIVE UNIT COST (1/impacted soil ton)					\$73 \$76

General Assumptions:

- assumes 22.5% bulking of subsurface soil due to solidification/stabilization
- landfill unit cost provided by Waste Management, Inc. RCRA Subtitle D facilities in Okeechobee, FL and Folkston, GA
- solidification/stabilization unit cost information provided by Williams Environmental (8/02) and Geo-Con (8/02)
- daily average rate of work assumed to range from 450 to 500 cubic yards of soil solidified/stabilized in-place (rate estimate provided by Williams and Geo-Con)
- assumes soil could be landfilled at a rate that would allow in-situ solidification/stabilization of 450 to 500 cubic yards of soil per day
- cost estimate assumes that non-impacted soil overlying impacted soil would require solidification/stabilization
- soil quantity is based on an assumed average conversion of 1.35 tons/cubic yard
- treated water discharge assumed to go to City of Sanford publicly owned treatment works or surface water (Cloud Branch Creek)
- the OU1 and OU2 groundwater monitoring programs represent a single monitoring initiative that would simultaneously measure the remedy effectiveness for both OUs
- groundwater monitoring assumes a total of 14 groundwater monitoring wells would be required with annual sampling for groundwater COCs
- groundwater monitoring cost assumes three quality assurance/quality control samples
- estimate does not account for fill material and sewer pipe necessary if grade were to be raised within the Cedar Avenue right-of-way
- estimate does not account for costs associated with obtaining deed restrictions, business relocation, business interruption, loss of revenue, change in property value, or potential property purchase

TABLE 18: Applicable or Relevant and Appropriate Requirement Provisions Contained in the following Statutes, Standard, Rules, Criteria, or Limitations

LOCATION SPECIFIC			
	Citation	Location/ Description	Comment
A	Federal Dredge and Fill Section	Excavation of surface and subsurface soils in the unnamed tributary and confluence of Cloud Branch Creek with the unnamed tributary. Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors.	Applicable Requirement
B	Federal or State endangered and Threatened Species of Fish and Wildlife Programs	Federal Endangered Species Act of 1973, 16 USC 1531 et seq., and the Federal Fish and Wildlife Coordination Act, 16 USC 661 et seq.	Applicable Requirement
CHEMICAL SPECIFIC			
A	Groundwater, Classes and Exemptions	Chapter 62-520.420, FAC	Applicable requirement
B	Drinking Water Standards	Chapter 62-550.310 and 550.320, FAC	Applicable requirement
C	Federal Drinking Water Standard Maximum Contaminant Levels	40 CFR 141.61 and 141.62	Applicable requirement
D	State of Florida Soil Cleanup Target Levels	Chapter 62-777, FAC	To Be Considered
ACTION SPECIFIC			
A	Environmental Resource Requirements	Issued through FDEP for the excavation and backfill activities within surface waters and wetlands and it is issued under the provisions of Chapter 373 and 403, Florida Statutes, Publication 92-500, Title 62, and Rule 62-312, FAC	Relevant requirement
B	National Pollutant Discharge Elimination System (NPDES) Permit Requirements	Issued through FDEP and may be required for the groundwater dewatering and treatment.	Relevant Requirement
C	Standards Applicable to Generators of Hazardous Wastes	40 CFR 262	Applicable requirement
D	DOT Rules for Hazardous Wastes	49 CFR 171	Applicable requirement
E	RCRA Land Disposal Restrictions	40 CFR 268	Applicable requirement
F	OSHA Standards for hazardous materials Response	29 CFR 1904, 1910, 1926	Applicable requirement
G	Florida Hazardous Waste Rule	Chapter 62-730, FAC	Relevant requirement
H	Standards for Hazardous Waste Transporters	40 CFR 263	Applicable requirement
I	Sewer use and Discharge Regulations	Article V, City of Sanford Code	Applicable requirement
J	Florida Ambient Air Quality Standards	Chapter 62-204, FAC	Applicable requirement

APPENDIX B: Risk Assessment Information

Exposure Pathways

**TABLE 1.1
SELECTION OF EXPOSURE PATHWAYS FOR SURFACE SOIL
FORMER SANFORD MGP**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population—	Receptor Age	Exposure Route	On-Site/Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface Soil	Any on-site or off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Workers currently on-site 5 days/week.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	No current construction activities.
				Trespasser/Visitor	Adolescent	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Access restrictions are not in place over entire Facility area.
				Resident	Child/Adult/Aggregate	Combined (Ingestion/Dermal)	On-site/Off-site	None	No residential exposures currently on-site or off-site.
		Air	Any on-site or off-site location	Commercial Worker	Adult	Inhalation	On-site/Off-site	Quant	Workers currently on-site 5 days/week.
				Construction Worker	Adult	Inhalation	On-site/Off-site	None	No current construction activities.
				Trespasser/Visitor	Adolescent	Inhalation	On-site/Off-site	Quant	Access restrictions are not in place over entire Facility area.
				Resident	Child/Adult/Aggregate	Inhalation	On-site/Off-site	None	No residential exposures currently on-site or off-site.
Future	Surface Soil	Surface Soil	Any on-site or off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Qual	Exposure same or less than current.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Potential exists for short-term construction activities.
				Trespasser/Visitor	Adolescent	Combined (Ingestion/Dermal)	On-site/Off-site	Qual	Exposure same or less than current.
				Resident	Child/Adult/Aggregate	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Potential exists for future residential use on-site and off-site.
		Air	Any on-site or off-site location	Commercial Worker	Adult	Inhalation	On-site/Off-site	Qual	Exposure same or less than current.
				Construction Worker	Adult	Inhalation	On-site/Off-site	Quant	Potential exists for short-term construction activities.
				Trespasser/Visitor	Adolescent	Inhalation	On-site/Off-site	Qual	Exposure same or less than current.
				Resident	Child/Adult/Aggregate	Inhalation	On-site/Off-site	Quant	Potential exists for future residential use on-site and off-site.

Shaded rows are those for which only qualitative analyses are conducted, or for which no exposure pathways are complete. Details are presented in the right-most column. Unshaded rows indicate that quantitative analyses were conducted.

**TABLE 1.2
SELECTION OF EXPOSURE PATHWAYS FOR SUBSURFACE SOIL
FORMER SANFORD MGP**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Subsurface Soil	Subsurface Soil	Any on-site or off-site location (e.g., utility trench)	Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	No current construction activities.
		Air	Any on-site or off-site location (e.g., utility trench)	Construction Worker	Adult	Inhalation	On-site/Off-site	None	No current construction activities.
Future	Subsurface Soil	Subsurface Soil	Any on-site or off-site location (e.g., utility trench)	Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Potential exists for short-term construction activities.
		Air	Any on-site or off-site location (e.g., utility trench)	Construction Worker	Adult	Inhalation	On-site/Off-site	Quant	Potential exists for short-term construction activities.

Shaded rows are those for which only qualitative analyses are conducted, or for which no exposure pathways are complete. Details are presented in the right-most column. Unshaded rows indicate that quantitative analyses were conducted.

**TABLE 1.3
SELECTION OF EXPOSURE PATHWAYS FOR SEDIMENT
FORMER SANFORD MGP**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Sediment	Sediment	Any off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	Typical commercial exposure not expected in areas having sediment impacts.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	No current construction activities.
				Trespasser/Visitor	Adolescent	Combined (Ingestion/Dermal)	Off-site	Quant	Warning signs are posted, but access restrictions are not in place in all off-site areas.
				Resident	Child/Adult /Aggregate	Combined (Ingestion/Dermal)	Off-site	Qual	Limited potential nearby residential exposure adequately represented by trespasser/visitor scenario.
		Air	Any off-site location	Trespasser/Visitor	Adolescent	Inhalation	Off-site	Quant	Warning signs are posted, but access restrictions are not in place in all off-site areas.
				Resident	Child/Adult /Aggregate	Inhalation	Off-site	Qual	Limited potential nearby residential exposure adequately represented by trespasser/visitor scenario.
Future	Sediment	Sediment	Any off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	Typical commercial exposure not expected in areas having sediment impacts.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	Off-site	Quant	Potential exists for short-term construction activities.
				Trespasser/Visitor	Adolescent	Combined (Ingestion/Dermal)	Off-site	Qual	Exposure same or less than current.
				Resident	Child/Adult /Aggregate	Combined (Ingestion/Dermal)	Off-site	Qual	Exposure same or less than current.
		Air	Any off-site location	Construction Worker	Adult	Inhalation	Off-site	Quant	Potential exists for short-term construction activities.
				Trespasser/Visitor	Adolescent	Inhalation	Off-site	Qual	Exposure same or less than current.
				Resident	Child/Adult /Aggregate	Inhalation	Off-site	Qual	Exposure same or less than current.

Shaded rows are those for which only qualitative analyses are conducted, or for which no exposure pathways are complete. Details are presented in the right-most column. Unshaded rows indicate that quantitative analyses were conducted.

**TABLE 1.4
SELECTION OF EXPOSURE PATHWAYS FOR GROUNDWATER
FORMER SANFORD MGP**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Any on-site or off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	Community-supplied water - no groundwater wells on-site or off-site.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	No current construction activities.
				Other Worker (Irrigation Maint)	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	No current irrigation maintenance activities.
				Resident	Child/Adult/Aggregate	Combined (Ingestion/Dermal)	On-site/Off-site	None	Community-supplied water - no groundwater wells on-site or off-site.
		Air	Any on-site or off-site location (groundwater-to-ambient air)	Commercial Worker	Adult	Inhalation	On-site/Off-site	None	Due to the limited volatility of the primary COPCs of interest (semivolatiles and inorganics), transfer from groundwater through the soil column to ambient air is not expected to be a significant exposure pathway.
				Construction Worker	Adult	Inhalation	On-site/Off-site	None	No current construction activities.
			Some off-site locations (groundwater-to-ambient air)	Resident	Child/Adult/Aggregate	Inhalation	Off-site	None	Due to the limited volatility of the primary COPCs of interest (semivolatiles and inorganics), transfer from groundwater through the soil column to ambient air is not expected to be a significant exposure pathway.
Future	Groundwater	Groundwater	Any on-site or off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	None	Community-supplied water - no groundwater wells on-site or off-site.
				Construction Worker	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Potential exists for short-term construction activities.
				Other Worker (Irrigation Maint)	Adult	Combined (Ingestion/Dermal)	On-site/Off-site	Quant	Potential exists for long-term irrigation/maintenance activities.
				Resident	Child/Adult/Aggregate	Combined (Ingestion/Dermal)	On-site/Off-site	None	Industrial/commercial use of on-site areas assumed to continue. Community-supplied water - no groundwater wells on-site or off-site.
		Air	Any on-site or off-site location (groundwater in a trench)	Construction Worker	Adult	Inhalation	On-site/Off-site	Quant	Potential exists for short-term construction activities.
			Any on-site or off-site location (groundwater sprayed on ground surface)	Other Worker (Irrigation Maint)	Adult	Inhalation	On-site/Off-site	Quant	Potential exists for long-term irrigation/maintenance activities.

Shaded rows are those for which only qualitative analyses are conducted, or for which no exposure pathways are complete. Details are presented in the right-most column. Unshaded rows indicate that quantitative analyses were conducted.

**TABLE 1.5
SELECTION OF EXPOSURE PATHWAYS FOR SURFACE WATER
FORMER SANFORD MGP**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway		
Current	Surface Water	Surface Water	Any off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	Typical commercial exposure not expected in areas having surface water impacts.		
				Construction Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	No current construction activities.		
				Swimmer	Child/Adult	Combined (Ingestion/Dermal)	Off-site	None	Only Lake Monroe has sufficient depth for swimming. Alligators and access limitations (3 foot seawall) effectively prevent swimming in nearby areas of Lake Monroe. No significant site-related impacts exist in Lake Monroe.		
				Trespasser/Visitor	Adolescent	Combined (Ingestion/Dermal)	Off-site	Quant	Warning signs are posted, but access restrictions are not in place in all off-site areas.		
				Resident	Child/Adult /Aggregate	Combined (Ingestion/Dermal)	Off-site	Qual	Residents currently live in some off-site areas having surface water impacts. Typical 350 day/year exposure is not expected, so the trespasser/visitor scenario is assumed to be protective of residents as well.		
		Air	Any off-site location	Trespasser/Visitor	Adolescent	Inhalation	Off-site	Quant	Warning signs are posted, but access restrictions are not in place in all off-site areas.		
				Resident	Child/Adult /Aggregate	Inhalation	Off-site	Qual	Residents currently live in some off-site areas having surface water impacts. Typical 350 day/year exposure is not expected, so the trespasser/visitor scenario is assumed to be protective of residents as well.		
		Fish Tissue	Any off-site location	Fisher	Child/Adult	Fish Ingestion	Off-site	None	Warning signs are posted and access limitations and the nature of the water bodies (i.e., very shallow or intermittent in nature) effectively prevent fishing in areas having surface water impacts.		
		Future	Surface Water	Surface Water	Any off-site location	Commercial Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	Typical commercial exposure not expected in areas having surface water impacts.
						Construction Worker	Adult	Combined (Ingestion/Dermal)	Off-site	None	Assumed that construction activities in areas having surface water would involve diverting the surface water away from the construction site.
Swimmer	Child/Adult					Combined (Ingestion/Dermal)	Off-site	None	Exposure conditions likely will not change from those described for the current timeframe.		
Trespasser/Visitor	Adolescent					Combined (Ingestion/Dermal)	Off-site	Qual	Exposure same or less than current.		
Resident	Child/Adult /Aggregate					Combined (Ingestion/Dermal)	Off-site	Qual	Exposure same or less than current.		
Air	Any off-site location			Trespasser/Visitor	Adolescent	Inhalation	Off-site	Qual	Exposure same or less than current.		
				Resident	Child/Adult /Aggregate	Inhalation	Off-site	Qual	Exposure same or less than current.		
Fish Tissue	Any off-site location			Fisher	Child/Adult	Fish Ingestion	Off-site	None	Exposure conditions likely will not change from those described for the current timeframe.		

Shaded rows are those for which only qualitative analyses are conducted, or for which no exposure pathways are complete. Details are presented in the right-most column. Unshaded rows indicate that quantitative analyses were conducted.

Exposure Assumptions

TABLE 4.1a
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORMER SANFORD MGP

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Any on-site or off-site location	Current/Future Commercial Worker	Adult	Ingestion	CDI	Chronic Daily Intake	mg/kg·day	See Table 7.1a and Table 7.1b		$CDI = \frac{CS \times EF \times ED \times FC \times IR_o \times CF_1}{BW \times AT}$
				CS	Concentration in Soil	mg/kg	See Table 3.1a and Table 3.1b		
				EF	Exposure Frequency	days/year	250	U.S. EPA, 1995a	
				ED	Exposure Duration	years	25	U.S. EPA, 1995a	
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1	U.S. EPA, 1995a	
				IR _o	Oral Ingestion Rate for Soil	mg/day	50	U.S. EPA, 1995a; U.S. EPA, 1997a	
				CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A	
				BW	Body Weight	kg	70	U.S. EPA, 1997a	
				AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	9,125	= ED * 365	
				AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550	U.S. EPA, 1989	
			Dermal	CDI	Chronic Daily Intake	mg/kg·day	See Table 7.1a and Table 7.1b	$CDI = \frac{CS \times EF \times ED \times FC \times SA \times AF \times DA \times CF_1}{BW \times AT}$	
				CS	Concentration in Soil	mg/kg	See Table 3.1a and Table 3.1b		
				EF	Exposure Frequency	days/year	250		U.S. EPA, 1995a
				ED	Exposure Duration	years	25		U.S. EPA, 1995a
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1		U.S. EPA, 1995a
				SA	Skin Surface Area available for daily contact	cm ²	2,503		See Appendix E
				AF	Soil-to-skin Adherence Factor	mg/cm ² /day	0.3		U.S. EPA, 1992a; U.S. EPA, 1995a
				DA (organics)	Dermal Absorption factor for organics	-	0.01		U.S. EPA, 1995a
				DA (inorganics)	Dermal Absorption factor for inorganics	-	0.001		U.S. EPA, 1995a
				CF ₁	Conversion Factor	kg/mg	1.0E-06		N/A
BW	Body Weight	kg	70	U.S. EPA, 1997a					
AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	9,125	= ED * 365					
AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550	U.S. EPA, 1989					

TABLE 4.1a
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORMER SANFORD MGP

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference	Intake Equation/Model Name
Any on-site or off-site location	Current/Future Trespasser/Visitor	Adolescent	Ingestion	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.2a and Table 7.2b	BPJ U.S. EPA, 1995a U.S. EPA, 1995a U.S. EPA, 1995a; U.S. EPA, 1997a N/A U.S. EPA, 1995a; U.S. EPA, 1997a = ED * 365 U.S. EPA, 1989	$CDI = \frac{CS \times EF \times ED \times FC \times IR_o \times CF_1}{BW \times AT}$
				CS	Concentration in Soil	mg/kg	See Table 3.1a and Table 3.1b		
				EF	Exposure Frequency	days/year	50		
				ED	Exposure Duration	years	10		
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1		
				IR _o	Oral Ingestion Rate for Soil	mg/day	200		
				CF ₁	Conversion Factor	kg/mg	1.0E-06		
				BW	Body Weight	kg	45		
				AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	3,650		
			AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550			
			Dermal	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.2a and Table 7.2b	BPJ U.S. EPA, 1995a U.S. EPA, 1995a See Appendix E U.S. EPA, 1992a; U.S. EPA, 1995a U.S. EPA, 1995a N/A U.S. EPA, 1995a; U.S. EPA, 1997a = ED * 365 U.S. EPA, 1989	$CDI = \frac{CS \times EF \times ED \times FC \times SA \times AF \times DA \times CF_1}{BW \times AT}$
				CS	Concentration in Soil	mg/kg	See Table 3.1a and Table 3.1b		
				EF	Exposure Frequency	days/year	50		
				ED	Exposure Duration	years	10		
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1		
				SA	Skin Surface Area available for daily contact	cm ²	4,041		
				AF	Soil-to-skin Adherence Factor	mg/cm ² /day	0.2		
				DA (organics)	Dermal Absorption factor for organics	-	0.01		
DA (inorganics)	Dermal Absorption factor for inorganics	-		0.001					
CF ₁	Conversion Factor	kg/mg	1.0E-06						
BW	Body Weight	kg	45						
AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	3,650						
AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550						

**TABLE 4.1a
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORMER SANFORD MGP**

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Any on-site or off-site location	Future Resident	Adult	Ingestion	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.4a and Table 7.4b		$CDI = \frac{CS \times EF \times ED \times FC \times IR_o \times CF_1}{BW \times AT}$
				CS	Concentration in Soil	mg/kg	See Table 3.1b		
				EF	Exposure Frequency	days/year	350	U.S. EPA, 1995a	
				ED	Exposure Duration	years	24	U.S. EPA, 1995a	
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1	U.S. EPA, 1995a	
				IR _o	Oral Ingestion Rate for Soil	mg/day	100	U.S. EPA, 1995a	
				CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A	
				BW	Body Weight	kg	70	U.S. EPA, 1997a	
			AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	8,760	= ED * 365		
			Dermal	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.4a and Table 7.4b	$CDI = \frac{CS \times EF \times ED \times FC \times SA \times AF \times DA \times CF_1}{BW \times AT}$	
				CS	Concentration in Soil	mg/kg	See Table 3.1b		
				EF	Exposure Frequency	days/year	350		U.S. EPA, 1995a
				ED	Exposure Duration	years	24		U.S. EPA, 1995a
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1		U.S. EPA, 1995a
				SA	Skin Surface Area available for daily contact	cm ²	4,508		See Appendix E
				AF	Soil-to-skin Adherence Factor	mg/cm ² /day	0.2		U.S. EPA, 1992; U.S. EPA, 1995
DA (organics)	Dermal Absorption factor for organics	-		0.01	U.S. EPA, 1995a				
DA (Inorganics)	Dermal Absorption factor for inorganics	-	0.001	U.S. EPA, 1995a					
CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A					
BW	Body Weight	kg	70	U.S. EPA, 1997a					
AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	8,760	= ED * 365					

**TABLE 4.1a
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORMER SANFORD MGP**

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name	
Any on-site or off-site location	Future Resident	Child	Ingestion	CDI	Chronic Daily Intake	mg/kg·day	See Table 7.3a and Table 7.3b		$CDI = \frac{CS \times EF \times ED \times FC \times IR_o \times CF_1}{BW \times AT}$	
				CS	Concentration in Soil	mg/kg	See Table 3.1b			
				EF	Exposure Frequency	days/year	350	U.S. EPA, 1995a		
				ED	Exposure Duration	years	6	U.S. EPA, 1995a		
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1	U.S. EPA, 1995a		
				IR _o	Oral Ingestion Rate for Soil	mg/day	200	U.S. EPA, 1995a		
				CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A		
			BW	Body Weight	kg	15	U.S. EPA, 1997a			
			AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	2,190	= ED * 365			
			Dermal	CDI	Chronic Daily Intake	mg/kg·day	See Table 7.3a and Table 7.3b	$CDI = \frac{CS \times EF \times ED \times FC \times SA \times AF \times DA \times CF_1}{BW \times AT}$		
				CS	Concentration in Soil	mg/kg	See Table 3.1b			
				EF	Exposure Frequency	days/year	350			U.S. EPA, 1995a
				ED	Exposure Duration	years	6			U.S. EPA, 1995a
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1			U.S. EPA, 1995a
SA	Skin Surface Area available for daily contact	cm ²		1,991	See Appendix E					
AF	Soil-to-skin Adherence Factor	mg/cm ² /day		0.2	U.S. EPA, 1992a; U.S. EPA, 1995a					
DA (organics)	Dermal Absorption factor for organics	-	0.01	U.S. EPA, 1995a						
DA (inorganics)	Dermal Absorption factor for inorganics	-	0.001	U.S. EPA, 1995a						
CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A						
BW	Body Weight	kg	15	U.S. EPA, 1997a						
AT-NC	Averaging Time for noncarcinogens (period over which exposure is averaged)	days	2,190	= ED * 365						

**TABLE 4.1a
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORMER SANFORD MGP**

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference	Intake Equation/Model Name		
Any on-site or off-site location	Future Resident	Aggregate	Ingestion	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.5a and Table 7.5b		$CDI = \frac{CS \times EF \times ED \times FC \times IR_s \times CF_1}{BW \times AT}$		
				CS	Concentration in Soil	mg/kg	See Table 3.1b				
				EF	Exposure Frequency	days/year	350			U.S. EPA, 1995a	
				ED	Exposure Duration	years	30			U.S. EPA, 1995a	
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1			U.S. EPA, 1995a	
				IR _s	Oral Ingestion Rate for Soil	mg/day	120			See Appendix E	
				CF ₁	Conversion Factor	kg/mg	1.0E-06			N/A	
				BW	Body Weight	kg	59			See Appendix E	
			AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550	U.S. EPA, 1989				
			Dermal	CDI	Chronic Daily Intake	mg/kg*day	See Table 7.5a and Table 7.5b			$CDI = \frac{CS \times EF \times ED \times FC \times SA \times AF \times DA \times CF_1}{BW \times AT}$	
				CS	Concentration in Soil	mg/kg	See Table 3.1b				
				EF	Exposure Frequency	days/year	350				U.S. EPA, 1995a
				ED	Exposure Duration	years	30				U.S. EPA, 1995a
				FC	Fraction Contacted (ingested or absorbed) from contaminated source (assumed 100%)	-	1				U.S. EPA, 1995a
SA	Skin Surface Area available for daily contact	cm ²		4,005	See Appendix E						
AF	Soil-to-skin Adherence Factor	mg/cm ² /day	0.2	U.S. EPA, 1992a; U.S. EPA, 1995a							
DA (organics)	Dermal Absorption factor for organics	-	0.01	U.S. EPA, 1995a							
DA (inorganics)	Dermal Absorption factor for inorganics	-	0.001	U.S. EPA, 1995a							
CF ₁	Conversion Factor	kg/mg	1.0E-06	N/A							
BW	Body Weight	kg	59	See Appendix E							
AT-C	Averaging Time for carcinogens (period over which exposure is averaged)	days	25,550	U.S. EPA, 1989							

BPJ Best Professional Judgement. Trespasser exposure frequency based on two days/week for 50 weeks/year.

Non-cancer toxicity data

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
FORMER SANFORD MGP

Chemical of Potential Concern	Subchronic Oral RfD Value (1) (mg/kg·day)	Chronic Oral RfD Value (mg/kg·day)	Oral to Dermal Adjustment Factor (2)	Subchronic Adjusted Dermal RfD (3) (mg/kg·day)	Chronic Adjusted Dermal RfD (3) (mg/kg·day)	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD/Target Organ	Dates of RfD/Target Organ (4)
Acenaphthene	6.0E-01	6.0E-02	0.8	4.8E-01	4.8E-02	liver	3,000	IRIS/IRIS	Apr 1999/Apr 1999
Acenaphthylene	NF	2.0E-02 (6)	0.8	NF	1.6E-02	blood	3,000 (6)	surrogate	N/A
Acetone	1.0E+00	1.0E-01	0.8	8.0E-01	8.0E-02	liver, kidney	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Aluminum	NF	1.0E+00	0.04 (a)	NF	4.0E-02	CNS	NF	NCEA/DOE	Apr 1999/Apr 1999
Antimony	NF	4.0E-04	0.01 (a)	NF	4.0E-06	blood	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Arsenic	NF	3.0E-04	0.95 (a)	NF	2.9E-04	skin	3	IRIS/IRIS	Apr 1999/Apr 1999
Barium	NF	7.0E-02	0.05 (a)	NF	3.5E-03	NOAEL	3	IRIS/IRIS	Apr 1999/Apr 1999
Benzene	NF	3.0E-03	0.90 (a)	NF	2.7E-03	CNS, blood	NF	NCEA/DOE	Apr 1999/Apr 1999
Benzo(a)anthracene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Benzo(a)pyrene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Benzo(b and/or k)fluoranthene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Benzo(b)fluoranthene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Benzo(k)fluoranthene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
BHC, beta-	NF	NF	0.907 (a)	NF	NF	NF	NF	NF	N/A
Butylbenzene, n-	NF	1.0E-02	0.8	NF	8.0E-03	CNS	NF	NCEA/Cavender	Apr 1999/1994
Butylbenzene, tert-	NF	1.0E-02	0.8	NF	8.0E-03	CNS	NF	NCEA/Cavender	Apr 1999/1994
Cadmium	NF	1.0E-03 (5)	0.044 (a)	NF	4.4E-05	kidney	10	IRIS/IRIS	Apr 1999/Apr 1999
Chlordane, gamma-	NF	5.0E-04	0.5	NF	2.5E-04	liver	300	IRIS/IRIS	Apr 1999/Apr 1999
Chromium (III)	NF	1.5E+00	0.013 (a)	NF	2.0E-02	NOAEL	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Chromium (VI)	2.0E-02	3.0E-03	0.013 (a)	2.6E-04	3.9E-05	NOAEL	900	IRIS/IRIS	Apr 1999/Apr 1999
Chrysene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Cobalt	NF	6.0E-02	0.25 (a)	NF	1.5E-02	NF	NF	NCEA/NF	Apr 1999/N/A
Copper	NF	4.0E-02	0.56 (a)	NF	2.2E-02	GI	NF	HEAST/HEAST	1997/1997
Cyanide	NF	2.0E-02	0.2	NF	4.0E-03	NOAEL	500	IRIS/IRIS	Apr 1999/Apr 1999
Dibenzo(a,h)anthracene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Dibenzofuran	NF	4.0E-03	0.8	NF	3.2E-03	skin	NF	NCEA/Skene et al.	Apr 1999/1989
Dichloroethane, 1,2-	NF	3.0E-02	1 (a)	NF	3.0E-02	CNS, liver	NF	NCEA/DOE	Apr 1999/Apr 1999
Dichloroethene, 1,1-	NF	9.0E-03	1 (a)	NF	9.0E-03	liver	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Dieldrin	NF	5.0E-05	1 (a)	NF	5.0E-05	liver	100	IRIS/IRIS	Apr 1999/Apr 1999
Ethylbenzene	NF	1.0E-01	0.8	NF	8.0E-02	liver, kidney	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Fluoranthene	4.0E-01	4.0E-02	0.5	2.0E-01	2.0E-02	liver, kidney, blood	3,000	IRIS/IRIS	Apr 1999/Apr 1999
Fluorene	4.0E-01	4.0E-02	0.8	3.2E-01	3.2E-02	blood	300	IRIS/IRIS	Apr 1999/Apr 1999
Indeno(1,2,3-c,d)pyrene	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Iron	NF	3.0E-01	0.085 (a)	NF	2.6E-02	GI	NF	NCEA/Nieminen & Lemasters	Apr 1999/1996
Isopropylbenzene	4.0E-01	1.0E-01	0.8	3.2E-01	8.0E-02	kidney	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Lead	NF	NF	N/A	NF	NF	NF	NF	NF	N/A
Manganese	1.4E-01	2.0E-02	0.04 (a)	5.6E-03	8.0E-04	CNS	1	IRIS/IRIS	Apr 1999/Apr 1999
Mercury	NF	1.0E-04 (6)	0.10 (a)	NF	1.0E-05	development, CNS	1,000 (6)	surrogate	N/A
Methyl-4,6-dinitrophenol, 2-	NF	1.0E-04	0.5	NF	5.0E-05	NF	NF	NCEA/NF	Apr 1999/N/A
Methylene chloride	NF	6.0E-02	1 (a)	NF	6.0E-02	liver	100	IRIS/IRIS	Apr 1999/Apr 1999

TABLE 5.1
NON-CANCER TOXICITY DATA – ORAL/DERMAL
FORMER SANFORD MGP

Chemical of Potential Concern	Subchronic Oral RfD Value (1) (mg/kg·day)	Chronic Oral RfD Value (mg/kg·day)	Oral to Dermal Adjustment Factor (2)	Subchronic Adjusted Dermal RfD (3) (mg/kg·day)	Chronic Adjusted Dermal RfD (3) (mg/kg·day)	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD/Target Organ	Dates of RfD/Target Organ (4)
Methylnaphthalene, 1-	NF	2.0E-02 (6)	0.8	NF	1.6E-02	NF	NF	surrogate	N/A
Methylnaphthalene, 2-	NF	2.0E-02	0.8	NF	1.6E-02	NF	NF	NCEA/NF	Apr 1999/N/A
Naphthalene	NF	2.0E-02	1 (a)	NF	2.0E-02	body weight	3,000	IRIS/IRIS	Apr 1999/Apr 1999
N-Nitrosodi-n-propylamine	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Nitroaniline, 2-	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Nitroaniline, 4-	NF	NF	0.5	NF	NF	NF	NF	NF	N/A
Phenanthrene	NF	2.0E-02 (6)	0.8	NF	1.6E-02	body weight	3,000 (6)	surrogate	N/A
Propylbenzene, n-	NF	1.0E-02	0.8	NF	8.0E-03	NF	NF	NCEA/NF	Apr 1999/N/A
Pyrene	3.0E-01	3.0E-02	0.5	1.5E-01	1.5E-02	kidney	3,000	IRIS/IRIS	Apr 1999/Apr 1999
Toluene	2.0E+00	2.0E-01	0.8	1.6E+00	1.6E-01	kidney, liver	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Trimethylbenzene, 1,2,4-	NF	5.0E-02	0.8	NF	4.0E-02	NF	NF	NCEA/NF	Apr 1999/N/A
Trimethylbenzene, 1,3,5-	NF	5.0E-02	0.8	NF	4.0E-02	NF	NF	NCEA/NF	Apr 1999/N/A
Vanadium	NF	7.0E-03	0.026 (a)	NF	1.8E-04	NOAEL	100	HEAST/HEAST	1997/1997
Xylenes, m&p-	NF	2.0E+00 (6)	0.8	NF	1.6E+00	hyperact, body weight	100	IRIS/IRIS	Apr 1999/Apr 1999
Xylenes, o-	NF	2.0E+00 (6)	0.8	NF	1.6E+00	hyperact, body weight	100	IRIS/IRIS	Apr 1999/Apr 1999
Xylenes, Total	NF	2.0E+00	0.895 (a)	NF	1.8E+00	hyperact, body weight	100	IRIS/IRIS	Apr 1999/Apr 1999
Zinc	NF	3.0E-01	0.25 (a)	NF	7.5E-02	blood	3	IRIS/IRIS	Apr 1999/Apr 1999

N/A = Not Applicable.

NF = Not Found.

(1) All subchronic RfDs were obtained from HEAST, 1997.

(2) Values obtained from current ATSDR profiles unless marked (a).

(a) Indicates a factor of 0.8 for volatiles, 0.5 for semivolatiles and 0.2 for inorganics, per Region IV guidance.

(3) Oral RfD multiplied by the oral-to-dermal adjustment factor.

(4) For IRIS values, the date IRIS was searched.

For DOE values, the date of the web site search.

For NCEA values, the date of the Region III RBC Table.

(5) Oral RfD for cadmium in food - for exposure to groundwater, the oral RfD for cadmium in water (5E-04) was used.

(6) Surrogate values based on closely related compounds as follows:

naphthalene for acenaphthylene and phenanthrene

methyl mercury for mercury

2-methylnaphthalene for 1-methylnaphthalene

total xylenes for m&p- and o-xylene

CNS = Central Nervous System

GI = Gastrointestinal

NOAEL = No Observed Adverse Effects Level

IRIS = Integrated Risk Information System

DOE = Department of Energy (website)

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

ATSDR = Agency for Toxic Substances and Disease Registry

TABLE 5.2
NON-CANCER TOXICITY DATA – INHALATION
FORMER SANFORD MGP

Chemical of Potential Concern	Subchronic Inhalation RFC Value (1) (mg/m ³)	Chronic Inhalation RFC Value (mg/m ³)	Subchronic Adjusted Inhalation RID (2) (mg/kg·day)	Chronic Adjusted Inhalation RID (2) (mg/kg·day)	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RFC,RID/Target Organ	Dates of RFC,RID/Target Organ (3)
Acenaphthene	NF	NF	NF	NF	NF	NF	NF	N/A
Acenaphthylene	NF	NF	NF	NF	NF	NF	NF	N/A
Acetone	NF	NF	NF	NF	NF	NF	NF	N/A
Aluminum	NF	NF	NF	1.0E-03	lung	NF	NCEA/DOE	Apr 1999/Apr 1999
Antimony	NF	NF	NF	NF	NF	NF	NF	N/A
Arsenic	NF	NF	NF	NF	NF	NF	NF	N/A
Barium	5.0E-03	5.0E-04	1.4E-03	1.4E-04	respiratory, blood pressure	1,000	HEAST/DOE	1997/Apr 1999
Benzene	NF	NF	NF	1.7E-03	blood, CNS	NF	NCEA/DOE	Apr 1999/Apr 1999
Benzo(a)anthracene	NF	NF	NF	NF	NF	NF	NF	N/A
Benzo(a)pyrene	NF	NF	NF	NF	NF	NF	NF	N/A
Benzo(b and/or k)fluoranthene	NF	NF	NF	NF	NF	NF	NF	N/A
Benzo(b)fluoranthene	NF	NF	NF	NF	NF	NF	NF	N/A
Benzo(k)fluoranthene	NF	NF	NF	NF	NF	NF	NF	N/A
BHC, beta-	NF	NF	NF	NF	NF	NF	NF	N/A
Butylbenzene, n-	NF	NF	NF	NF	NF	NF	NF	N/A
Butylbenzene, tert-	NF	NF	NF	NF	NF	NF	NF	N/A
Cadmium	NF	NF	NF	NF	NF	NF	NF	N/A
Chlordane, gamma-	NF	7.0E-04	NF	2.0E-04	liver	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Chromium (III)	NF	NF	NF	NF	NF	NF	NF	N/A
Chromium (VI)	NF	1.0E-04	NF	2.9E-05	respiratory	300	IRIS/IRIS	Apr 1999/Apr 1999
Chrysene	NF	NF	NF	NF	NF	NF	NF	N/A
Cobalt	NF	NF	NF	NF	NF	NF	NF	N/A
Copper	NF	NF	NF	NF	NF	NF	NF	N/A
Cyanide	NF	NF	NF	NF	NF	NF	NF	N/A
Dibenzo(a,h)anthracene	NF	NF	NF	NF	NF	NF	NF	N/A
Dibenzofuran	NF	NF	NF	NF	NF	NF	NF	N/A
Dichloroethane, 1,2-	NF	NF	NF	1.4E-03	CNS, kidney, liver	NF	NCEA/DOE	Apr 1999/Apr 1999
Dichloroethane, 1,1-	NF	NF	NF	NF	NF	NF	NF	N/A
Dieldrin	NF	NF	NF	NF	NF	NF	NF	N/A
Ethylbenzene	NF	1.0E+00	NF	2.86E-01	developmental	300	IRIS/IRIS	Apr 1999/Apr 1999
Fluoranthene	NF	NF	NF	NF	NF	NF	NF	N/A
Fluorene	NF	NF	NF	NF	NF	NF	NF	N/A
Indeno (1,2,3-c,d)pyrene	NF	NF	NF	NF	NF	NF	NF	N/A
Iron	NF	NF	NF	NF	NF	NF	NF	N/A
Isopropylbenzene	NF	4.0E-01	NF	1.1E-01	kidney, adrenal	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Lead	NF	NF	NF	NF	NF	NF	NF	N/A
Manganese	NF	5.0E-05	NF	1.4E-05	CNS	1,000	IRIS/IRIS	Apr 1999/Apr 1999
Mercury	NF	3.0E-04	NF	8.6E-05	CNS	30	IRIS/IRIS	Apr 1999/Apr 1999
Methyl-4,6-dinitrophenol, 2-	NF	NF	NF	NF	NF	NF	NF	N/A
Methylene chloride	NF	3.0E+00	NF	8.6E-01	liver	100	HEAST/DOE	1997/Apr 1999

**TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
FORMER SANFORD MGP**

Chemical of Potential Concern	Subchronic Inhalation RfC Value (1) (mg/m ³)	Chronic Inhalation RfC Value (mg/m ³)	Subchronic Adjusted Inhalation RfD (2) (mg/kg·day)	Chronic Adjusted Inhalation RfD (2) (mg/kg·day)	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC,RfD/Target Organ	Dates of RfC,RfD/Target Organ (3)
Methylnaphthalene, 1-	NF	3.0E-03	NF	8.6E-04	nasal	NF	surrogate	N/A
Methylnaphthalene, 2-	NF	3.0E-03	NF	8.6E-04	nasal	NF	surrogate	N/A
Naphthalene	NF	3.0E-03	NF	8.6E-04	nasal	3,000	IRIS/IRIS	Apr 1999/Apr 1999
N-Nitrosodi-n-propylamine	NF	NF	NF	NF	NF	NF	NF	N/A
Nitroaniline, 2-	2.0E-03	2.0E-04	5.7E-04	5.7E-05	blood	10,000	HEAST/DOE	1997/Apr 1999
Nitroaniline, 4-	2.0E-03 (4)	2.0E-04 (4)	5.7E-04 (4)	5.7E-05 (4)	NF	NF	surrogate	N/A
Phenanthrene	NF	NF	NF	NF	NF	NF	NF	N/A
Propylbenzene, n-	NF	NF	NF	NF	NF	NF	NF	N/A
Pyrene	NF	NF	NF	NF	NF	NF	NF	N/A
Toluene	NF	4.0E-01	NF	1.1E-01	CNS	300	IRIS/IRIS	Apr 1999/Apr 1999
Trimethylbenzene, 1,2,4-	NF	NF	NF	1.7E-03	CNS	NF	NCEA/DOE	Apr 1999/Apr 1999
Trimethylbenzene, 1,3,5-	NF	NF	NF	1.7E-03	CNS	NF	NCEA/DOE	Apr 1999/Apr 1999
Vanadium	NF	NF	NF	NF	NF	NF	NF	N/A
Xylenes, m&p-	NF	NF	NF	NF	NF	NF	NF	N/A
Xylenes, o-	NF	NF	NF	NF	NF	NF	NF	N/A
Xylenes, Total	NF	NF	NF	NF	NF	NF	NF	N/A
Zinc	NF	NF	NF	NF	NF	NF	NF	N/A

N/A = Not Applicable

NF = Not Found.

(1) All subchronic RfCs were obtained from HEAST, 1997.

(2) Derived by multiplying the RfC by the inhalation rate of 20m³/day and dividing by the body weight of 70 kg.

(3) For IRIS values, the date IRIS was searched.

For DOE values, the date of the web site search.

For NCEA values, the date of the Region III RfC Table.

(4) Surrogate values based on 2-nitroaniline.

CNS = Central Nervous System

IRIS = Integrated Risk Information System

DOE = Department of Energy (website)

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

Cancer toxicity data

TABLE 6.1
 CANCER TOXICITY DATA – ORAL/DERMAL
 FORMER SANFORD MGP

Chemical of Potential Concern	Oral Cancer Slope Factor (mg/kg·day) ⁻¹	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1) (mg/kg·day) ⁻¹	Weight of Evidence/ Cancer Guideline Description	Source Cancer Slope Factor	Date (2)
Acenaphthene	N/A	0.8	N/A	Not Likely	N/A	N/A
Acenaphthylene	N/A	0.8	N/A	Not Likely	N/A	N/A
Acetone	N/A	0.8	N/A	Not Likely	N/A	N/A
Aluminum	N/A	0.04	N/A	Not Likely	N/A	N/A
Antimony	N/A	0.01	N/A	Not Likely	N/A	N/A
Arsenic	1.5E+00	0.95	1.6E+00	Known/Likely/A	IRIS	Apr 1999
Barium	N/A	0.05	N/A	Not Likely	N/A	N/A
Benzene	2.9E-02	0.9	3.2E-02	Known/Likely/A	IRIS	Apr 1999
Benzo(a)anthracene	7.3E-01	0.5	1.5E+00	Known/Likely/B2	TEF	N/A
Benzo(a)pyrene	7.3E+00	0.5	1.5E+01	Known/Likely/B2	IRIS	Apr 1999
Benzo(b and/or k)fluoranthene	7.3E-01	0.5	1.5E+00	Known/Likely/B2	TEF	N/A
Benzo(b)fluoranthene	7.3E-01	0.5	1.5E+00	Known/Likely/B2	TEF	N/A
Benzo(k)fluoranthene	7.3E-02	0.5	1.5E-01	Known/Likely/B2	TEF	N/A
BHC, beta-	1.8E+00	0.907	2.0E+00	Known/Likely/C	IRIS	Apr 1999
Butylbenzene, n-	N/A	0.8	N/A	Not Likely	N/A	N/A
Butylbenzene, tert-	N/A	0.8	N/A	Not Likely	N/A	N/A
Cadmium	N/A	0.044	N/A	Not Likely	N/A	N/A
Chlordane, gamma-	3.5E-01	0.5	7.0E-01	Known/Likely/B2	IRIS	Apr 1999
Chromium (III)	N/A	0.013	N/A	Not Likely	N/A	N/A
Chromium (VI)	N/A	0.013	N/A	Not Likely	N/A	N/A
Chrysene	7.3E-03	0.5	1.5E-02	Known/Likely/B2	TEF	N/A
Cobalt	N/A	0.25	N/A	Not Likely	N/A	N/A
Copper	N/A	0.56	N/A	Cannot be determined/D	N/A	N/A
Cyanide	N/A	0.2	N/A	Cannot be determined/D	N/A	N/A
Dibenzo(a,h)anthracene	7.3E+00	0.5	1.5E+01	Known/Likely/B2	TEF	N/A
Dibenzofuran	N/A	0.8	N/A	Not Likely	N/A	N/A
Dichloroethane, 1,2-	9.1E-02	1.0	9.1E-02	Known/Likely/B2	IRIS	Apr 1999
Dichloroethene, 1,1-	6.0E-01	1.0	6.0E-01	Known/Likely/C	IRIS	Apr 1999
Dieldrin	1.6E+01	1.0	1.6E+01	Known/Likely/B2	IRIS	Apr 1999
Ethylbenzene	N/A	0.8	N/A	Cannot be determined/D	N/A	N/A
Fluoranthene	N/A	0.5	N/A	Cannot be determined/D	N/A	N/A
Fluorene	N/A	0.8	N/A	Not Likely	N/A	N/A
Indeno(1,2,3-c,d)pyrene	7.3E-01	0.5	1.5E+00	Known/Likely/B2	TEF	N/A
Iron	N/A	0.085	N/A	Cannot be determined/D	N/A	N/A
Isopropylbenzene	N/A	0.8	N/A	Not Likely	N/A	N/A
Lead	N/A	N/A	N/A	Not Likely	N/A	N/A
Manganese	N/A	0.04	N/A	Cannot be determined/D	N/A	N/A
Mercury	N/A	0.1	N/A	Not Likely	N/A	N/A
Methyl-4,6-dinitrophenol, 2-	N/A	0.5	N/A	Not Likely	N/A	N/A
Methylene chloride	7.5E-03	1.0	7.5E-03	Known/Likely/B2	IRIS	Apr 1999

**TABLE 6.1
CANCER TOXICITY DATA – ORAL/DERMAL
FORMER SANFORD MGP**

Chemical of Potential Concern	Oral Cancer Slope Factor (mg/kg·day) ¹	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1) (mg/kg·day) ¹	Weight of Evidence/ Cancer Guideline Description	Source Cancer Slope Factor	Date (2)
Methylnaphthalene, 1-	N/A	0.8	N/A	Not Likely	N/A	N/A
Methylnaphthalene, 2-	N/A	0.8	N/A	Not Likely	N/A	N/A
Naphthalene	N/A	1.0	N/A	Cannot be determined/D	N/A	N/A
N-Nitrosodi-n-propylamine	7.0E+00	0.5	1.4E+01	Known/Likely/B2	IRIS	Apr 1999
Nitroaniline, 2-	N/A	0.5	N/A	Not Likely	N/A	N/A
Nitroaniline, 4-	N/A	0.5	N/A	Not Likely	N/A	N/A
Phenanthrene	N/A	0.8	N/A	Cannot be determined/D	N/A	N/A
Propylbenzene, n-	N/A	0.8	N/A	Not Likely	N/A	N/A
Pyrene	N/A	0.5	N/A	Not Likely	N/A	N/A
Toluene	N/A	0.8	N/A	Cannot be determined/D	N/A	N/A
Trimethylbenzene, 1,2,4-	N/A	0.8	N/A	Not Likely	N/A	N/A
Trimethylbenzene, 1,3,5-	N/A	0.8	N/A	Not Likely	N/A	N/A
Vanadium	N/A	0.026	N/A	Not Likely	N/A	N/A
Xylenes, m&p-	N/A	0.8	N/A	Not Likely	N/A	N/A
Xylenes, o-	N/A	0.8	N/A	Not Likely	N/A	N/A
Xylenes, Total	N/A	0.895	N/A	Not Likely	N/A	N/A
Zinc	N/A	0.25	N/A	Cannot be determined/D	N/A	N/A

N/A Not applicable.

IRIS = Integrated Risk Information System

TEF=Benzo(a)pyrene Toxicity Equivalence Factor methodology

(1) Oral CSF divided by the dermal adjustment factor (see Table 5.1).

(2) For IRIS values, the date IRIS was searched.

Cancer Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

TABLE 6.2
 CANCER TOXICITY DATA - INHALATION
 FORMER SANFORD MGP

Chemical of Potential Concern	Unit Risk (mg/m ³) ⁻¹	Adjustment (1)	Inhalation Cancer Slope Factor	Weight of Evidence/ Cancer Guideline Description	Source	Date (2)
Acenaphthene	N/A	N/A	N/A	Not likely	N/A	N/A
Acenaphthylene	N/A	N/A	N/A	Not likely	N/A	N/A
Acetone	N/A	N/A	N/A	Not likely	N/A	N/A
Aluminum	N/A	N/A	N/A	Not likely	N/A	N/A
Antimony	N/A	N/A	N/A	Not likely	N/A	N/A
Arsenic	4.3E+00	x BW + IR	1.5E+01	Known/Likely/A	IRIS	Apr 1999
Barium	N/A	N/A	N/A	Known/Likely/B2	N/A	N/A
Benzene	8.3E-03	x BW + IR	2.9E-02	Known/Likely/A	IRIS	Apr 1999
Benzo(a)anthracene	N/A	N/A	3.1E-01	Known/Likely/B2	TEF	N/A
Benzo(a)pyrene	NF	N/A	3.1E+00	Known/Likely/B2	IRIS	Apr 1999
Benzo(b and/or k)fluoranthene	NF	N/A	3.1E-01	Known/Likely/B2	TEF	N/A
Benzo(b)fluoranthene	NF	N/A	3.1E-01	Known/Likely/B2	TEF	N/A
Benzo(k)fluoranthene	NF	N/A	3.1E-02	Known/Likely/B2	TEF	N/A
BHC, beta-	5.3E-01	x BW + IR	1.86E+00	Known/Likely/C	IRIS	Apr 1999
Butylbenzene, n-	N/A	N/A	N/A	Not likely	N/A	N/A
Butylbenzene, tert-	N/A	N/A	N/A	Not likely	N/A	N/A
Cadmium	1.8E+00	x BW + IR	6.3E+00	Know/Likely/B1	IRIS	Apr 1999
Chlordane, gamma-	1.0E-01	x BW + IR	3.5E-01	Known/Likely/B2	IRIS	Apr 1999
Chromium (III)	N/A	N/A	N/A	Not likely	N/A	N/A
Chromium (VI)	1.2E+01	x BW + IR	4.2E+01	Known/Likely/A	IRIS	Apr 1999
Chrysene	NF	N/A	3.1E-03	Known/Likely/B2	TEF	N/A
Cobalt	N/A	N/A	N/A	Not likely	N/A	N/A
Copper	N/A	N/A	N/A	Not likely	N/A	N/A
Cyanide	N/A	N/A	N/A	Not likely	N/A	N/A
Dibenzo(a,h)anthracene	NF	N/A	3.1E+00	Known/Likely/B2	TEF	N/A
Dibenzofuran	N/A	N/A	N/A	Not likely	N/A	N/A
Dichloroethane, 1,2-	2.6E-02	x BW + IR	9.1E-02	Known/Likely/B2	IRIS	Apr 1999
Dichloroethene, 1,1-	5.0E-02	x BW + IR	1.75E-01	Known/Likely/C	IRIS	Apr 1999
Dieldrin	4.6E+00	x BW + IR	1.6E+01	Known/Likely/B2	IRIS	Apr 1999
Ethylbenzene	N/A	N/A	N/A	Not likely	N/A	N/A
Fluoranthene	N/A	N/A	N/A	Not likely	N/A	N/A
Fluorene	N/A	N/A	N/A	Not likely	N/A	N/A
Indeno(1,2,3-c,d)pyrene	NF	N/A	3.1E-01	Known/Likely/B2	TEF	N/A
Iron	N/A	N/A	N/A	Not likely	N/A	N/A
Isopropylbenzene	N/A	N/A	N/A	Not likely	N/A	N/A
Lead	N/A	N/A	N/A	Not likely	N/A	N/A
Manganese	N/A	N/A	N/A	Not likely	N/A	N/A
Mercury	N/A	N/A	N/A	Not likely	N/A	N/A
Methyl-4,6-dinitrophenol, 2-	N/A	N/A	N/A	Not likely	N/A	N/A
Methylene chloride	4.7E-04	x BW + IR	1.6E-03	Known/Likely/B2	IRIS	Apr 1999

**TABLE 6.2
CANCER TOXICITY DATA – INHALATION
FORMER SANFORD MGP**

Chemical of Potential Concern	Unit Risk (mg/m ³) ⁻¹	Adjustment (1)	Inhalation Cancer Slope Factor	Weight of Evidence/ Cancer Guideline Description	Source	Date (2)
Methylnaphthalene, 1-	N/A	N/A	N/A	Not likely	N/A	N/A
Methylnaphthalene, 2-	N/A	N/A	N/A	Not likely	N/A	N/A
Naphthalene	N/A	N/A	N/A	Not likely	N/A	N/A
N-Nitrosodi-n-propylamine	NF	N/A	N/A	Not likely	N/A	N/A
Nitroaniline, 2-	N/A	N/A	N/A	Not likely	N/A	N/A
Nitroaniline, 4-	N/A	N/A	N/A	Not likely	N/A	N/A
Phenanthrene	N/A	N/A	N/A	Not likely	N/A	N/A
Propylbenzene, n-	N/A	N/A	N/A	Not likely	N/A	N/A
Pyrene	N/A	N/A	N/A	Not likely	N/A	N/A
Toluene	N/A	N/A	N/A	Not likely	N/A	N/A
Trimethylbenzene, 1,2,4-	N/A	N/A	N/A	Not likely	N/A	N/A
Trimethylbenzene, 1,3,5-	N/A	N/A	N/A	Not likely	N/A	N/A
Vanadium	N/A	N/A	N/A	Not likely	N/A	N/A
Xylenes, m&p-	N/A	N/A	N/A	Not likely	N/A	N/A
Xylenes, o-	N/A	N/A	N/A	Not likely	N/A	N/A
Xylenes, Total	N/A	N/A	N/A	Not likely	N/A	N/A
Zinc	N/A	N/A	N/A	Not likely	N/A	N/A

N/A=Not applicable.
NF=Not Found.

IRIS = Integrated Risk Information System
TEF=Benzo(a)pyrene Toxicity Equivalence Factor methodology

- (1) Inhalation Unit Risk multiplied by body weight (BW; 70 kg) and divided by inhalation rate (IR; 20m³/day).
(2) For IRIS values, the date IRIS was searched.

Cancer Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Weight of Evidence:
Known/Likely
Not Likely

Lead Model Calculations

Exposure Equation J-1

Calculation of a Site-Specific RGO for Lead

$$PbS = \frac{(PbB_{a,c,g} - PbB_{a,0}) \times AT}{BKSF \times IR_s \times AF_s \times EF_s \times ED}$$

where,

for pregnancy considerations only,

$$PbB_{a,c,g} = \frac{PbB_{f,0.95,g}}{GSD_{i,a}^{1.645} \times R_{f/m}}$$

$$\text{and, } PbB_{f,0.95,g} = PbB_{a,c} \times GSD_{i,a}^{1.645} \times R_{f/m}$$

Exposure Parameter	Description	Pregnant Construction Worker Values
PbS	Soil lead concentration (appropriate average concentration for individual) expressed in ug/g (mg/kg; parts per million);	1,067
PbB _{a,c,g}	Goal for central estimate of blood concentration (ug/dL) in adults that have site exposures (default pregnant females value for Construction Worker);	3.70
PbB _{a,0}	Typical adult blood lead concentration (ug/dL) in the absence of site exposures [median of reported range (1.7-2.2 ug/dL), U.S. EPA, 1996];	1.95
AT	Averaging Time for exposure expressed in days;	122
BKSF	Biokinetic Slope Factor relating increase in typical adult blood lead concentration to average daily blood lead uptake (ug/dL per ug/day; default value, U.S. EPA, 1996);	0.4
IR _s	Intake Rate of soil expressed in g/day, including outdoor soil and indoor soil-derived dust (default value, U.S. EPA, 1996);	0.05
AF _s	Absolute gastrointestinal absorption fraction for ingested lead in soil and dust (dimensionless; default value, U.S. EPA, 1996);	0.12
EF _s	Exposure Frequency expressed in days/year (default);	250
ED	Exposure Duration (construction duration) expressed in years;	0.33
PbB _{f,0.95,g}	Goal for the 95th percentile blood lead concentration (ug/dL) among fetuses born to women having site exposures (default value, U.S. EPA, 1996);	10
GSD _{i,a}	Geometric Standard Deviation [dimensionless; median of reported range (1.8-2.1 ug/dL), U.S. EPA, 1996];	1.95
R _{f/m}	Constant of proportionality between fetal blood concentration at birth and maternal blood lead concentration (dimensionless; default value, U.S. EPA, 1996); and,	0.900
PbB _{a,c}	Central estimate of blood lead concentration (ug/dL) in adults that have site exposures [median of reported range (1.7-2.2 ug/dL), U.S. EPA, 1996].	1.95

Adapted from the U.S. EPA Technical Review Workgroup (TRW) Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil (U.S. EPA, 1996).

Risk Assessment Summary

**TABLE 10.1a RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Current
Receptor Population:	Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
Surface Soil	Surface Soil	Any on-site location	Arsenic	4.4E-06	--	7.0E-08	4.5E-06							
			Benzo(a)anthracene	3.3E-06	--	9.9E-07	4.3E-06							
			Benzo(a)pyrene	3.6E-05	--	1.1E-05	4.7E-05							
			Benzo(b and/or k)fluoranthene	1.3E-05	--	3.8E-06	1.6E-05							
			Benzo(b)fluoranthene	2.2E-06	--	6.5E-07	2.8E-06							
			Dibenzo(a,h)anthracene	4.4E-06	--	1.3E-06	5.8E-06							
			Indeno(1,2,3-c,d)pyrene	1.2E-06	--	3.6E-07	1.6E-06							
	(Total)		6.4E-05	--	1.8E-05	8.2E-05	(Total)	(Total)	--	--	--	--	--	
Surface Soil	Air	Any on-site location												
		(Total)		--	--	--	(Total)	(Total)	--	--	--	--	--	
Total Risk Across Surface Soil						8.2E-05		Total Hazard Index Across Surface Soil					--	

**TABLE 10.1b RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Current
Receptor Population:	Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
Surface Soil	Surface Soil	Any off-site location	Arsenic	4.5E-06	--	7.1E-08	4.6E-06							
			Benzo(a)anthracene	5.3E-05	--	1.6E-05	6.9E-05							
			Benzo(a)pyrene	5.7E-04	--	1.7E-04	7.5E-04							
			Benzo(b and/or k)fluoranthene	8.4E-05	--	2.5E-05	1.1E-04							
			Benzo(b)fluoranthene	8.6E-06	--	2.6E-06	1.1E-05							
			Dibenzo(a,h)anthracene	8.7E-06	--	2.6E-06	1.1E-05							
			Indeno(1,2,3-c,d)pyrene	1.0E-05	--	3.0E-06	1.3E-05							
		(Total)	7.4E-04	--	2.2E-04	9.6E-04		(Total)	--	--	--	--	--	
Surface Soil	Air	Any off-site location	Benzo(a)pyrene	--	2.1E-06	--	2.1E-06	Methylnaphthalene, 2-Naphthalene	nasal	--	7.2E-01	--	7.2E-01	
			(Total)	--	2.1E-06	--	2.1E-06	nasal	--	5.2E-01	--	5.2E-01		
				(Total)	--	2.1E-06	--	2.1E-06	(Total)	--	--	--	1.2E+00	
				Total Risk Across Surface Soil								Total Hazard Index Across Surface Soil		
				9.7E-04								1.2E+00		

Total nasal HI = 1.2E+00

**TABLE 10.2a RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Current
Receptor Population:	Trespasser/Visitor
Receptor Age:	Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient						
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Surface Soil	Surface Soil	Any on-site location	Arsenic	2.2E-06	--	8.8E-09	2.2E-06								
			Benzo(a)anthracene	1.6E-06	--	1.2E-07	1.8E-06								
			Benzo(a)pyrene	1.8E-05	--	1.4E-06	1.9E-05								
			Benzo(b and/or k)fluoranthene	6.3E-06	--	4.7E-07	6.7E-06								
			Benzo(b)fluoranthene	1.1E-06	--	8.2E-08	1.2E-06								
			Dibenzo(a,h)anthracene	2.2E-06	--	1.7E-07	2.4E-06								
(Total)	3.1E-05	--	2.2E-06	3.4E-05	(Total)	(Total)	--	--	--	--					
Surface Soil	Air	Any on-site location													
			(Total)	--	--	--	--	(Total)	(Total)	--	--	--	--		
Total Risk Across Surface Soil						3.4E-05		Total Hazard Index Across Surface Soil						--	

**TABLE 10.2b RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Current
Receptor Population:	Trespasser/Visitor
Receptor Age:	Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Any off-site location	Arsenic	2.2E-06	—	8.9E-09	2.2E-06						
			Benzo(a)anthracene	2.6E-05	—	2.0E-06	2.8E-05						
			Benzo(a)pyrene	2.9E-04	—	2.2E-05	3.1E-04						
			Benzo(b and/or k)fluoranthene	4.2E-05	—	3.2E-06	4.5E-05						
			Benzo(b)fluoranthene	4.3E-06	—	3.3E-07	4.6E-06						
			Dibenzo(a,h)anthracene	4.3E-06	—	3.3E-07	4.7E-06						
			Indeno(1,2,3-c,d)pyrene	5.0E-06	—	3.8E-07	5.3E-06						
	(Total)	3.7E-04	—	2.8E-05	4.0E-04	(Total)	(Total)	—	—	—	—		
	Air	Any off-site location											
	(Total)	—	—	—	—	(Total)	(Total)	—	—	—	—		
Total Risk Across Surface Soil							4.0E-04	Total Hazard Index Across Surface Soil					—
Sediment	Sediment	Any off-site location	Benzo(a)pyrene	1.8E-06	—	1.4E-07	2.0E-06						
			(Total)	1.8E-06	—	1.4E-07	2.0E-06						
	Air	Any off-site location											
(Total)	—	—	—	—	(Total)	(Total)	—	—	—	—			
Total Risk Across Sediment							2.0E-06	Total Hazard Index Across Sediment					—
Total Risk Across All Media and All Routes							4.0E-04	Total Hazard Index Across All Media and All Routes					—

**TABLE 10.3 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Any off-site location		NC	-	NC	NC	Antimony	blood	3.2E-01	-	6.4E-02	3.8E-01
				NC	-	NC	NC	Arsenic	skin	7.3E-01	-	1.5E-03	7.3E-01
				NC	-	NC	NC	Dibenzofuran	skin	6.0E-01	-	1.5E-02	6.2E-01
				NC	-	NC	NC	Fluoranthene	liver, kidney, blood	5.6E-01	-	2.2E-02	5.8E-01
				NC	-	NC	NC	Fluorene	blood	1.3E-01	-	3.2E-03	1.3E-01
				NC	-	NC	NC	Iron	GI	1.2E+00	-	2.9E-02	1.3E+00
				NC	-	NC	NC	Naphthalene	body weight	1.6E-01	-	3.1E-03	1.6E-01
				NC	-	NC	NC	Phenanthrene	body weight	1.2E+00	-	3.0E-02	1.2E+00
				NC	-	NC	NC	Pyrene	kidney	1.2E+00	-	4.6E-02	1.2E+00
				(Total)	NC	NC	NC	NC	(Total)	6.1E+00	-	2.1E-01	6.3E+00
	Air	Any off-site location		-	NC	-	NC	Methylnaphthalene, 2-	nasal	-	3.0E+00	-	3.0E+00
				-	NC	-	NC	Naphthalene	nasal	-	2.1E+00	-	2.1E+00
				(Total)	-	NC	-	NC	(Total)	-	5.1E+00	-	5.1E+00

Total Risk Across Surface Soil **NC**

Total Hazard Index Across Surface Soil **1.1E+01**

Total body weight HI =	1.4E+00	Total GI HI =	1.3E+00
Total blood HI =	1.1E+00	Total kidney HI =	1.8E+00
Total skin HI =	1.4E+00	Total nasal HI =	5.1E+00

**TABLE 10.4 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Cardiogenic Risk				Chemical	Non-Cardiogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
Surface Soil	Surface Soil	Any off-site location												
			(Total)	-	-	-	-		(Total)	-	-	-	-	-
Surface Soil	Air	Any off-site location						Methylnaphthalene, 2-Naphthalene	nasal	-	1.0E+00	-	1.0E+00	
									nasal	-	7.5E-01	-	7.5E-01	
			(Total)	-	-	-	-		(Total)	-	1.8E+00	-	1.8E+00	
Total Risk Across Surface Soil				NC				Total Hazard Index Across Surface Soil				1.8E+00		

Total nasal HI = **1.8E+00**

**TABLE 10.5a RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Aggregate

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Any on-site location	Arsenic	2.1E-05	--	1.5E-07	2.1E-05						
			Benzo(a)anthracene	1.6E-05	--	2.1E-06	1.8E-05						
			Benzo(a)pyrene	1.7E-04	--	2.3E-05	2.0E-04						
			Benzo(b and/or k)fluoranthene	6.0E-05	--	8.0E-06	6.8E-05						
			Benzo(b)fluoranthene	1.0E-05	--	1.4E-06	1.2E-05						
			Dibenzo(a,h)anthracene	2.1E-05	--	2.8E-06	2.4E-05						
			Indeno(1,2,3-c,d)pyrene	5.7E-06	--	7.6E-07	6.5E-06						
			(Total)	3.1E-04	--	3.8E-05	3.4E-04	(Total)	(Total)	--	--	--	
	Air	Any on-site location											
			(Total)	--	--	--	--	(Total)	(Total)	--	--	--	
Total Risk Across Surface Soil							3.4E-04	Total Hazard Index Across Surface Soil					--

**TABLE 10.5b RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Aggregate

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Any off-site location	Arsenic	2.2E-05	--	1.5E-07	2.2E-05						
			Benzo(a)anthracene	2.5E-04	--	3.4E-05	2.9E-04						
			Benzo(a)pyrene	2.7E-03	--	3.7E-04	3.1E-03						
			Benzo(b and/or k)fluoranthene	4.0E-04	--	5.4E-05	4.6E-04						
			Benzo(b)fluoranthene	4.1E-05	--	5.5E-06	4.7E-05						
			Benzo(k)fluoranthene	1.1E-06	--	1.5E-07	1.2E-06						
			Chrysene	2.5E-06	--	3.3E-07	2.8E-06						
			Dibenzo(a,h)anthracene	4.2E-05	--	5.6E-06	4.7E-05						
			Indeno(1,2,3-c,d)pyrene	4.8E-05	--	6.4E-06	5.4E-05						
			(Total)	3.6E-03	--	4.7E-04	4.0E-03	(Total)	(Total)	--	--	--	--
	Air	Any off-site location	Benzo(a)pyrene	--	4.0E-06	--	4.0E-06						
		(Total)	--	4.0E-06	--	4.0E-06	(Total)	(Total)	--	--	--	--	
Total Risk Across Surface Soil						4.0E-03	Total Hazard Index Across Surface Soil					--	

**TABLE 10.6a RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient						
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Surface Soil	Surface Soil	Any on-site location	Benzo(a)pyrene	1.9E-06	--	5.6E-07	2.4E-06	(Total)	(Total)	--	--	--	--		
			(Total)	1.9E-06	--	5.6E-07	2.4E-06								
	Air	Any on-site location													
			(Total)	--	--	--	--	(Total)	(Total)	--	--	--	--		
Total Risk Across Surface Soil							2.4E-06	Total Hazard Index Across Surface Soil					--		
Groundwater	Groundwater	Any on-site location					(Total)	Benzene	CNS, blood	1.3E-01	--	1.8E+00	1.9E+00		
			(Total)	--	--	--				(Total)	(Total)	1.3E-01	--	1.8E+00	1.9E+00
	Air	Any on-site location													
			(Total)	--	--	--	--	(Total)	(Total)	--	--	--	--		
Total Risk Across Groundwater							--	Total Hazard Index Across Groundwater					1.9E+00		
Total Risk Across All Media and All Routes							2.4E-06	Total Hazard Index Across All Media and All Routes					1.9E+00		

Total CNS HI = **1.9E+00**

**TABLE 10.6b RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Any off-site location	Benzo(a)anthracene Benzo(a)pyrene Benzo(b and/or k)fluoranthene (Total)	2.8E-06 3.0E-05 4.4E-06 3.7E-05	- - - -	8.2E-07 8.9E-06 1.3E-06 1.1E-05	3.6E-06 3.9E-05 5.7E-06 4.8E-05	Iron	GI	1.8E-01	-	3.2E-02	2.1E-01
	Air	Any off-site location								Methylnaphthalene, 2-Naphthalene	nasal nasal (Total)	- - -	1.1E+00 8.1E-01 1.9E+00
Total Risk Across Surface Soil				4.8E-05				Total Hazard Index Across Surface Soil					2.2E+00
Subsurface Soil	Subsurface Soil	Any off-site location	Arsenic Benzo(a)anthracene Benzo(a)pyrene Benzo(b and/or k)fluoranthene Benzo(b)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-c,d)pyrene (Total)	6.6E-05 3.9E-05 2.8E-04 2.4E-05 2.0E-05 8.6E-05 2.1E-05 5.3E-04	- - - - - - - -	4.9E-09 5.5E-08 3.9E-07 3.4E-08 2.8E-08 1.2E-07 3.0E-08 6.7E-07	6.6E-05 3.9E-05 2.8E-04 2.4E-05 2.0E-05 8.6E-05 2.1E-05 5.3E-04	Iron	GI	8.3E-01	-	1.4E-01	9.7E-01
	Air	Any off-site location								(Total)	- - -	- - -	- - -
Total Risk Across Subsurface Soil				5.3E-04				Total Hazard Index Across Subsurface Soil					9.7E-01
Sediment	Sediment	Any off-site location											
	Air	Any off-site location											
Total Risk Across Sediment				-				Total Hazard Index Across Sediment					-
Groundwater	Groundwater	Any off-site location						Iron Naphthalene (Total)	GI body weight (Total)	2.3E-02 8.0E-02 1.0E-01	- - -	1.6E-01 3.2E+00 3.4E+00	1.8E-01 3.3E+00 3.5E+00
	Air	Any off-site location						Naphthalene	nasal (Total)	- -	2.1E+00 2.1E+00	- -	2.1E+00 2.1E+00
Total Risk Across Groundwater				-				Total Hazard Index Across Groundwater					5.6E+00
Total Risk Across All Media and All Routes				5.8E-04				Total Hazard Index Across All Media and All Routes					7.8E+00

Total body weight HI =	3.3E+00
Total nasal HI =	4.1E+00
Total GI HI =	1.4E+00

**TABLE 10.7 RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER SANFORD MGP**

Scenario Timeframe:	Future
Receptor Population:	Other Worker (Irrigation Maint)
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient						
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Groundwater	Groundwater	Any on-site location	Benzene	2.6E-07	-	3.5E-06	3.8E-06	(Total)	(Total)						
			(Total)	2.6E-07	-	3.5E-06	3.8E-06			-	-	-	-		
	Air	Any on-site location	Benzene	-	1.7E-06	-	1.7E-06	(Total)	(Total)						
			(Total)	-	1.7E-06	-	1.7E-06			-	-	-	-		
Total Risk Across Groundwater							5.4E-06	Total Hazard Index Across Groundwater							-

Table B-1
Analytes Detected in On-site Surface Soil.

Table B-1
 Analytes Detected in On-Site Surface Soil
 Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI						
	SS-CS-01 (mg/kg)	SS-CS-02 (mg/kg)	SS-CS-03 (mg/kg)	SS-CS-04 (mg/kg)	SS-FS-06 (mg/kg)	SS-FS-07 (mg/kg)	SS-LGH-08 (mg/kg)	SS-LGH-09 (mg/kg)	SS-LGH-10 (mg/kg)	SS-AGT-11 (mg/kg)	SS-AGT-12 (mg/kg)	SS-PB-13 (mg/kg)	SS-PB-13D (mg/kg)	SS-PB-14 (mg/kg)
Acenaphthene	0.57 U	0.51 U	0.43 U	0.36 U	0.46 U	0.39 U	0.38 U	0.47 U	0.38 U	0.4 U	1.8 U	1.2 U	0.084 J	9.8 U
Acenaphthylene	0.13 J	0.29 J	0.43 U	0.047 J	0.13 J	0.2 J	0.38 U	0.47 U	0.38 U	0.4 U	0.5 J	1.1 J	2.0	6.7 J
Aldrin	0.0029 U	0.0026 U	0.0022 U	0.00069 J	0.0023 U	0.002 U	NR	0.0024 U	NR	0.002 U	NR	0.002 N	0.0022 U	0.01 U
Aluminum	2,000	2,600	2,100	1,500	2,900	430	1,200	1,400	2,500	3,000	3,500	8,400	9,500	3,600
Anthracene	0.15 J	0.18 J	0.43 U	0.36 U	0.054 J	0.14 J	0.058 J	0.47 U	0.38 U	0.4 U	0.29 J	0.26 J	0.37 J	1.4 J
Antimony	1.9 J	3.5 J	1 U	0.63 UJ	2 U	0.60 U	0.72 U	0.64 U	0.66 U	0.71 UJ	0.72 U	0.69 U	0.71 U	1 U
Arsenic	8.8	89	39	4.7	8.6	1.6 J	0.45 U	1 U	0.41 U	1 U	3.1	3	2.5	2.8
Barium	63	150	23	21	230	24	11	21	16	22	14	79	94	29
Benzo(a)anthracene	0.61	1.3	0.17 J	0.38	0.43 J	0.98	0.86	0.31 J	0.38 U	0.4 U	2.9	1.4	2.6	22
Benzo(a)pyrene	0.75	1.1	0.32 J	0.48	0.44 J	0.7	0.71	0.28 J	0.38 U	0.4 U	2.8	2.4	4.9	25
Benzo(b and/or k)fluoranthene	1.7	3.0	1.1	1.0 J	1.1	1.7	1.5	0.63	0.08 J	0.056 J	5.3	3.4 J	6.7	34 J
Benzo(b)fluoranthene	NR	NR	NR	NR	NR	NR	NR	NR						
Benzo(g,h,i)perylene	0.24 J	0.34 J	0.16 J	0.28 J	0.15 J	0.16 J	0.19 J	0.1 J	0.38 U	0.4 U	1.8 U	2.2	2.4	10
Benzo(k)fluoranthene	NR	NR	NR	NR	NR	NR	NR	NR						
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BHC, alpha-	0.0029 U	0.0026 U	0.0022 U	0.0018 U	0.0023 U	0.002 U	NR	0.0024 U	NR	0.002 U	NR	0.002 U	0.0022 U	0.01 U
Bis(2-ethylhexyl)phthalate	0.57 U	0.51 U	0.43 U	0.36 U	0.69	0.39 U	0.38 U	0.47 U	0.38 U	0.4 U	1.8 U	1.2 U	0.83 U	9.8 U
Cadmium	1 U	2 U	1 U	1 UJ	2 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
Calcium	2,800	3,800	790	15,000	9,000	1,200	2,000	7,500	1,500	1,500	1,900	12,000	8,700	11,000
Carbazole	0.06 J	0.12 J	0.43 U	0.36 U	0.46 U	0.39 U	0.38 U	0.47 U	0.38 U	0.4 U	1.8 U	1.2 U	0.83 U	9.8 U
Chlordane, alpha-	0.0029 U	0.0026 U	0.0022 U	0.0018 U	0.0023 U	0.002 U	NR	0.0024 U	NR	0.002 U	NR	0.006 U	0.0022 U	0.04 U
Chromium	3.8	9.2	2.5	2.9	16	1.5 J	2.4 J	2.9	4	5.1	5.7	10	11	8.9
Chrysene	0.86	1.7	0.38 J	0.48	0.62	1.2	0.95	0.34 J	0.042 J	0.4 U	3.7	1.4	2.3	21
Cobalt	2.3 J	6 J	0.73 J	0.26 U	2.4 J	1 U	0.30 U	0.26 U	0.27 U	0.29 U	0.50 J	0.36 J	0.29 U	2.4 J
Copper	54	65	9.4	5 UJ	100	7.4	2 U	6 U	2 U	3 UJ	10	6.9	6.4	13
Cyanide	0.2 U	0.3 U	0.3 U	0.1 U	0.5 U	0.2 U	0.2 U	0.05 U	0.1 U	0.2 U	1.6	0.6 U	0.66	0.6 U
DDD, 4,4'-	0.0057 U	0.0037 JN	0.0043 U	0.0036 U	0.0017 JN	0.0039 U	NR	0.0047 U	NR	0.004 U	NR	0.0038 U	0.0042 U	0.02 U
DDE, 4,4'-	0.0023 J	0.005 U	0.0043 U	0.0036 U	0.0061 N	0.011	NR	0.0014 JN	NR	0.004 U	NR	0.02 U	0.0036 JN	0.2 U
DDT, 4,4'-	0.0057 U	0.005 U	0.0043 U	0.0036 U	0.0045 U	0.0088 U	NR	0.0024 U	NR	0.0012 J	NR	0.0038 U	0.0042 U	0.02 U
di-n-Butylphthalate	0.57 U	0.51 U	0.43 U	0.36 U	0.46 U	0.45	0.38 U	0.47 U	0.38 U	0.4 U	1.8 U	1.2 U	0.83 U	9.8 U
Dibenzo(a,h)anthracene	0.11 J	0.19 J	0.074 J	0.065 J	0.054 J	0.069 J	0.078 J	0.47 U	0.38 U	0.4 U	1.8 U	1.2 U	0.83 U	2.7 J

NR Not reported.
 I Value detected between MDL and PQL.
 J Estimated value.
 N Presumptive evidence.
 U Material was analyzed for but not detected. The number is the minimum quantitation limit.

Table B-1
Analytes Detected in On-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI
	SS-GH-15 (mg/kg)	SS-GH-16 (mg/kg)	SS-MH-17 (mg/kg)	SS-GHS-18 (mg/kg)	SS-GHS-19 (mg/kg)	SS-GHS-20 (mg/kg)	SS-FS-21 (mg/kg)	SS-FS-21D (mg/kg)	SS-TR-22 (mg/kg)	SS-TR-23 (mg/kg)	SS-GHN-24 (mg/kg)	SS-GHN-25 (mg/kg)	SS-GHN-26 (mg/kg)	SS-AGT-27 (mg/kg)
Acenaphthene	0.45 J	0.059 J	1.2 U	1.6 U	36 UJ	0.38 U	12 UJ	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Acenaphthylene	3.6 J	0.56	0.36 J	2.4	20 J	0.38 U	12 J	5.7	9.4 U	8.6 U	1.3 J	3.8	4.7 J	0.044 J
Aldrin	0.011 U	0.005 U	0.02 U	0.019 U	NR	0.0019 U	0.0099 U	0.0095 U	NR	NR	0.0099 U	0.0019 U	0.002 U	NR
Aluminum	1,300	4,600	7,300	730	560	5,000	1,700	2,000	210 U	910	1,700 J	1,100 J	1,000 J	870
Anthracene	0.99 J	0.28 J	0.36 J	1.0 J	9.7 J	0.38 U	2.9 J	1.4 J	9.4 U	8.6 U	4.1 J	1.3 J	2.6 J	0.4 U
Antimony	3 J	1.3 J	1 U	3 U	1.2 J	0.65 U	0.67 UJ	0.77 J	6.4 J	5.5 J	3.3 UJ	3.2 UJ	3.4 UJ	0.72 U
Arsenic	4	3.7	6.9	5	15	2 U	5.3	5.5	16	32	1.7 J	0.84 U	0.88 U	0.51 J
Barium	51	120	160	63	30	23	3,000	3,500	39	41	27 J	7.7 J	15 J	10 U
Benzo(a)anthracene	12	1.9	2.2	12	130 J	0.19 J	20 J	8.6	9.4 U	8.6 U	17	6.8	13	0.21 J
Benzo(a)pyrene	15	2.9	1.7	11	130 J	0.24 J	24 J	11	7.0 J	8.3 J	12	5.2	8.4	0.23 J
Benzo(b and/or k)fluoranthene	27 J	4.9	3.5 J	25 J	230 J	0.39	40 J	20	25	32	19	10	16	0.36 J
Benzo(b)fluoranthene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Benzo(g,h,i)perylene	8.6	0.95	0.72 J	3.2	65 J	0.15 J	12 J	3.2 J	9.4 U	8.6 U	1.0 J	4.2 J	5.9 U	0.14 J
Benzo(k)fluoranthene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	1 U	1 U	1.3	1 U	1 U	1 U	1 U	1 U	0.04 U	1 U	1 U	1 U	1 U	1 U
BHC, alpha-	0.011 U	0.0021 U	0.002 U	0.011 U	NR	0.0019 U	0.0099 U	0.0095 U	NR	NR	0.0019 J	0.0019 U	0.002 U	NR
Bis(2-ethylhexyl)phthalate	4.1 U	0.4 U	1.8 U	1.6 U	36 UJ	0.38 U	12 UJ	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Cadmium	1.7	1.8	2 U	2.9	1 UJ	0.04 U	24 J	28 J	0.07 U	0.07 U	0.33 U	0.32 U	1 UJ	1 U
Calcium	20,000	41,000	47,000	5,000	1,800	3,000	24,000	25,000	250	260	41,000 J	23,000 J	37,000 J	1,700
Carbazole	4.1 U	0.071 J	1.2 U	1.6 U	36 UJ	0.38 U	12 UJ	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Chlordane, alpha-	0.03 U	0.007 U	0.01 U	0.03 U	NR	0.0019 U	0.0099 U	0.0095 U	NR	NR	0.01	0.01 U	0.02 U	NR
Chromium	4.1	11	8.9	5.9	19	7.3	23	23	29	27	3 UJ	1.7 J	1.5 J	3.6
Chrysene	15	2.2	1.8	13	140 J	0.21 J	23 J	10	15	21	15	6.8	13	0.26 J
Cobalt	1.4 J	2 J	1.6 J	2.2 J	4.3 J	0.27 U	0.28 U	0.28 U	1.4 J	1.6 J	2 UJ	0.56 U	0.59 U	0.30 U
Copper	25	22	30	66	72 J	3 U	69 J	68 J	62	42	7.5 J	4.1 J	14 J	8.8
Cyanide	0.84	1.1	0.94	10	29	0.61	45	41	1,100	1,300	3 UJ	0.4 UJ	0.4 UJ	0.4 U
DDD, 4,4'-	0.02 U	0.004 U	0.007 U	0.02 U	NR	0.0038 U	0.019 U	0.019 U	NR	NR	0.019 U	0.0036 U	0.0039 U	NR
DDE, 4,4'-	0.07 U	0.004 U	0.0038 U	0.06 U	NR	0.0038 U	0.06 U	0.019 U	NR	NR	0.019 U	0.029	0.055 N	NR
DDT, 4,4'-	0.02 U	0.02 U	0.06 U	0.02 U	NR	0.0055 U	0.0045 JN	0.019 U	NR	NR	0.023	0.005 U	0.02 U	NR
di-n-Butylphthalate	4.1 U	1.0 U	2.0 U	1.6 U	36 UJ	2.5	12 UJ	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	2.0 U
Dibenzo(a,h)anthracene	2.3 J	0.082 J	1.2 U	1.6 U	14 J	0.38 U	3.1 J	1.2 J	9.4 U	8.6 U	1.2 J	0.47 J	0.79 J	0.4 U

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Table B-1
Analytes Detected in On-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	RI	RI	RI	RI	RI
	SS-SSH-28 (mg/kg)	SED-01 (mg/kg)	SS-01 (mg/kg)	SS-02 (mg/kg)	SS-03 (mg/kg)	SS-04 (mg/kg)	SS-05 (mg/kg)	SS-06 (mg/kg)	SS-07 (mg/kg)	SS-08 (mg/kg)	SS-11 (mg/kg)	SS-12 (mg/kg)	SS-13 (mg/kg)	SS-15 (mg/kg)	SS-DUP1 (SS-13) (mg/kg)
Acenaphthene	11 UJ	44	NR	0.19 U	0.23 U	0.39 I	0.18 U	0.42 I							
Acenaphthylene	2.4 J	4.6	0.27 U	0.24 U	2.7 U	24	2.8 U	6.0	4.5	1.5 U	0.2 I	0.65	8.4	0.18 U	6.9
Aldrin	0.0021 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Aluminum	3,100	4,400 J	930	1,300	5,100	1,000	2,000	NR							
Anthracene	0.82 J	21	0.27 U	0.24 U	2.7 U	17 U	2.8 U	1.4	1.5 U	1.5 U	0.19 U	0.38 I	2.8	0.18 U	1.7
Antimony	2 UJ	15 U	NR												
Arsenic	2.9	2.8	0.7	0.6	3.1	2.6	42	NR	NR	NR	0.6 U	3.2	0.6 U	0.5 U	11
Barium	20	64	7	15	55	47	29	NR	NR	NR	22 U	320	23 U	21 U	23 U
Benzo(a)anthracene	4.7 J	18	1.1	0.24 U	2.7 U	72	2.8 U	3.6	5.8	1.5 U	0.69	3.8	18	0.4	14
Benzo(a)pyrene	4.9 J	16	1.4	0.24 U	2.7 U	83	3.5	6.7	9.2	1.5	1.1	3.9	16	0.32	12
Benzo(b and/or k)fluoranthene	7.6 J	NR	3.0	0.24 U	2.7 U	157	8.7	14.2	19.3	4.2	NR	NR	NR	NR	NR
Benzo(b)fluoranthene	NR	14	NR	1.1	3.5	17	0.32	13							
Benzo(g,h,i)perylene	2.4 J	7.9	0.67	0.24 U	2.7 U	57	2.8 U	2.9	3.7	1.5 U	0.79	1.5	0.19 U	0.3 I	0.19 U
Benzo(k)fluoranthene	NR	8	NR	1.1	3.4	16	0.36	13							
Beryllium	1 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
BHC, alpha-	0.0021 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl)phthalate	11 UJ	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.19 U	0.23 U	0.19 U	0.18 U	0.19 U
Cadmium	1 UJ	0.5 U	0.5 U	0.8	0.5 U	0.8	2.6	NR	NR	NR	1 U	1 U	1 U	1 U	1 U
Calcium	6,300	29,000	3,100	2,800	32,000	37,000	1,600	NR							
Carbazole	11 UJ	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chlordane, alpha-	0.0021 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	10	54	2.8	4.8	39	3.5	49	NR	NR	NR	13	24	5.4	3	1.9
Chrysene	5.7 J	17	1.2	0.24 U	2.7 U	69	3.4	4.1	7.3	1.8	0.75	3.8	20	0.34 I	14
Cobalt	1.1 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	3.3	NR							
Copper	34 J	68	7	40	12	19	20	NR	NR	NR	7.1	220	7.5	5.9	8.1
Cyanide	0.6 U	0.5 U	0.5 U	8.6	4.5	5.9	2,400	NR	NR	NR	0.1 U	7.1	0.1 I	0.1 U	5.1
DDD, 4,4'-	0.0041 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DDE, 4,4'-	0.032	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DDT, 4,4'-	0.03 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
di-n-Butylphthalate	11 UJ	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U
Dibenzo(a,h)anthracene	11 UJ	61 U	NR	0.21 I	0.46 I	2.2	0.18 U	1.8							

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**Table B-1
Analytes Detected in On-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data**

ANALYTE	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI						
	SS-CS-01 (mg/kg)	SS-CS-02 (mg/kg)	SS-CS-03 (mg/kg)	SS-CS-04 (mg/kg)	SS-FS-06 (mg/kg)	SS-FS-07 (mg/kg)	SS-LGH-08 (mg/kg)	SS-LGH-09 (mg/kg)	SS-LGH-10 (mg/kg)	SS-AGT-11 (mg/kg)	SS-AGT-12 (mg/kg)	SS-PB-13 (mg/kg)	SS-PB-13D (mg/kg)	SS-PB-14 (mg/kg)
Dibenzofuran	0.066 J	0.37 J	0.072 J	0.36 U	0.11 J	0.39 U	0.38 U	0.47 U	0.38 U	0.4 U	1.8 U	0.13 J	0.14 J	9.8 U
Dieldrin	0.0029 U	0.005 U	0.0043 U	0.0044	0.0045 U	0.0018 J	NR	0.00031 JN	NR	0.004 U	NR	0.0038 U	0.0049 U	0.21
Endosulfan II	0.0033 J	0.005 U	0.0043 U	0.0036 U	0.0026 J	0.001 JN	NR	0.0047 U	NR	0.004 U	NR	0.008 N	0.0042 U	0.05 U
Endosulfan sulfate	0.0057 U	0.0018 J	0.0043 U	0.0036 U	0.0045 U	0.0039 U	NR	0.0047 U	NR	0.004 U	NR	0.0038 U	0.0042 U	0.02 U
Endrin ketone	0.0043 JN	0.0094 U	0.0023 J	0.0036 U	0.0032 JN	0.002 U	NR	0.0047 U	NR	0.004 U	NR	0.02 U	0.0042 U	0.02 U
Fluoranthene	0.91	1.5	0.22 J	0.32 J	0.74	2.2	2.0	0.45 J	0.065 J	0.037 J	4.6	1.5	2.8	25
Fluorene	0.57 U	0.51 U	0.43 U	0.36 U	0.46 U	0.061 J	0.38 U	0.47 U	0.38 U	0.4 U	0.23 J	1.2 U	0.15 J	9.8 U
Heptachlor epoxide	0.0029 U	0.0039 N	0.0022 U	0.0021	0.0010 JN	0.002 U	NR	0.00012 J	NR	0.004 U	NR	0.0013 JN	0.00074 JN	0.04 U
Indeno(1,2,3-c,d)pyrene	0.37 J	0.49 J	0.22 J	0.30 J	0.18 J	0.27 J	0.28 J	0.12 J	0.38 U	0.4 U	0.61 J	1.7	2.7	14
Iron	5,300	62,000	2,000	1,100	11,000	1,700	450	950	930	1,600	2,500 J	2,800	2,600 J	4,700 J
Lead	290	430	26	16	670	100	15	57	21	23	100	49	51	90
Magnesium	310	330	90 U	220	680	70 U	140	120	140	210	140	2,100	1,400	1,100
Manganese	40	310	13	7.2	150	16	2.8 J	6.2	3.5	7	19	99	170	44
Mercury	0.07 U	0.31	0.05 U	0.05 U	0.2 U	0.06 U	0.06 U	0.05 U	0.05 U	0.06 U	0.2 UJ	0.06 U	0.06 U	0.05 U
Methoxychlor	0.0029 U	0.026 U	0.022 U	0.018 U	0.023 U	0.02 U	NR	0.024 U	NR	0.02 U	NR	0.06 U	0.022 U	0.9 U
Methylnaphthalene, 1-	NR	NR	NR	NR	NR	NR	NR	NR						
Methylnaphthalene, 2-	0.065 J	0.71	0.17 J	0.36 U	0.32 J	0.043 J	0.38 U	0.47 U	0.23 J	0.40 U	1.8 U	1.2 U	0.13 J	9.8 U
Naphthalene	0.57 U	0.46 J	0.10 J	0.36 U	0.18 J	0.040 J	0.38 U	0.47 U	0.69	0.40 U	1.8 U	1.2 U	0.83 U	9.8 U
Nickel	5.8 J	9.9	2.2 J	1 U	7.2 J	1.2 J	0.95 U	0.92 J	0.86 U	0.93 U	2.8 J	5.6 J	3.9 J	8.9 J
Phenanthrene	0.62	1.6	0.29 J	0.076 J	0.65	1.9	0.44	0.056 J	0.061 J	0.40 U	4.5	0.34 J	0.33 J	0.88 J
Potassium	58	240	68	39	150	31	60	46	64	170	77	300	330	520
Pyrene	1.1	1.6	0.39 J	0.55	0.96	2.2	2.0	0.54	0.079 J	0.050 J	8.2	3.0	6.6	56
Selenium	1.4	4	1 U	0.43 U	1.9	0.41 U	1 U	0.44 U	1 U	1 U	0.5 U	0.47 U	0.49 U	0.49 U
Sodium	110 U	100 U	50 U	30 U	110 U	40 U	140 U	30 U	40 U	40 U	40 U	200 U	200 U	60 U
Vanadium	5.6 J	14	2.8 J	3.5 J	9 J	1.8 J	3.4 J	3.3 J	6.2 J	8.3 J	5.4 J	8.9 J	9.3 J	8.2 J
Zinc	83 J	200	20 UJ	17	570 J	99 J	20 UJ	43 J	20 UJ	30 U	66	81	69	160

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Table B-1
Analytes Detected in On-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI	ESI
	SS-GH-15 (mg/kg)	SS-GH-16 (mg/kg)	SS-MH-17 (mg/kg)	SS-GHS-18 (mg/kg)	SS-GHS-19 (mg/kg)	SS-GHS-20 (mg/kg)	SS-FS-21 (mg/kg)	SS-FS-21D (mg/kg)	SS-TR-22 (mg/kg)	SS-TR-23 (mg/kg)	SS-GHN-24 (mg/kg)	SS-GHN-25 (mg/kg)	SS-GHN-26 (mg/kg)	SS-AGT-27 (mg/kg)
Dibenzofuran	4.1 U	0.4 U	1.2 U	1.6 U	36 UJ	0.38 U	12 UJ	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Dieldrin	0.011 U	0.004 U	0.0038 U	0.02 U	NR	0.00077 JN	0.019 U	0.0095 U	NR	NR	0.26	0.0036 U	0.004 U	NR
Endosulfan II	0.06 U	0.004 U	0.02 U	0.05 U	NR	0.0038 U	0.06 U	0.029	NR	NR	0.06 U	0.02 U	0.02 U	NR
Endosulfan sulfate	0.013 J	0.004 U	0.0038 U	0.02 U	NR	0.0038 U	0.019 U	0.019 U	NR	NR	0.019 U	0.0036 U	0.0039 U	NR
Endrin ketone	0.02 U	0.02 U	0.03 U	0.2 U	NR	0.0038 U	0.019 U	0.019 U	NR	NR	0.05 U	0.02 U	0.017 N	NR
Fluoranthene	8.8	2.0	3.0	10	210 J	0.33 J	28 J	11	8.4 J	8.3 J	20	8.9	20	0.22 J
Fluorene	4.1 U	0.092 J	1.2 U	0.24 J	36 UJ	0.38 U	1.8 J	0.93 J	9.4 U	8.6 U	0.59 J	0.66 J	1.6 J	0.4 U
Heptachlor epoxide	0.02 U	0.0043	0.002 U	0.02	NR	0.0019 U	0.02 U	0.0095 U	NR	NR	0.07	0.02 U	0.049 N	NR
Indeno(1,2,3-c,d)pyrene	10	1.0	0.91 J	4.4	66 J	0.15 J	11 J	4.5	2.7 J	4.3 J	2.8 J	1.3 J	1.9 J	0.12 J
Iron	5,900 J	6,700	7,500 J	17,000 J	51,000	2,100 J	12,000	9,600	25,000 J	29,000 J	3,800 J	1,300 J	2,500 J	680 J
Lead	130	180	180	240	150	11	260	310	47	69	130 J	110 J	100 J	13
Magnesium	1,800	4,100	5,700	190	150	440	1,500	1,800	70 U	94	4,100 J	390 J	850 J	70 U
Manganese	60	110	250	78	110	14	220	230	150	200	120 J	11 J	35 J	5.4
Mercury	0.2 UJ	0.06 U	0.06 U	0.93 J	1.6	0.05 U	0.25	0.36	0.52 J	0.55 J	0.06 U	0.13	0.06 U	0.06 U
Methoxychlor	0.5 U	0.1	0.21	0.5 U	NR	0.0019 U	0.46	0.2 U	NR	NR	0.82	0.19 U	0.4 U	NR
Methylnaphthalene, 1-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylnaphthalene, 2-	4.1 U	0.052 J	1.2 U	1.6 U	36 UJ	0.38 U	3.2 J	1.4 J	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Naphthalene	4.1 U	0.093 J	1.2 U	1.6 U	36 UJ	0.38 U	1.7 J	3.7 U	9.4 U	8.6 U	5.8 U	2.2 U	5.9 U	0.4 U
Nickel	4.3 J	15	11	7.1 J	15	2.2 J	12	9.9	31	26	1.1 U	1.1 U	1.2 U	1 J
Phenanthrene	1.1 J	0.86	1.3	1.4 J	32 J	0.039 J	5.2 J	2.5 J	9.4 U	1.4 J	17	5.1	20	0.066 J
Potassium	80	320	840	41	160	92	110	150	150	200	31 J	30 U	30 U	33
Pyrene	19	2.8	3.6	25	370 J	0.51	66 J	23	7.1 J	9.3	31	13	28	0.47
Selenium	0.51 U	0.48 U	0.47 U	0.51 U	2.2	0.45 U	1 U	1 U	7.9	6.4	0.88 U	0.86 U	0.91 U	0.50 U
Sodium	90 U	180 U	180 U	40 U	150	30 U	1,600 U	200 U	60 U	50 U	70 UJ	30 UJ	40 UJ	40 U
Vanadium	10 J	11 J	11 J	10 J	21	7.4 J	6.7 J	6.4 J	5.2 J	7.1 J	4 UJ	3 UJ	2 UJ	1.3 J
Zinc	630	380	320	560	25	30	5,100	4,700	24	31	48 J	20 UJ	52 J	30 U

NR Not reported.
I Value detected between MDL and PQL.
J Estimated value.
N Presumptive evidence.
U Material was analyzed for but not detected. The number is the minimum quantitation limit.

Table B-1
 Analytes Detected in On-Site Surface Soil
 Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	RI	RI	RI	RI	RI
	SS-SSH-28 (mg/kg)	SED-01 (mg/kg)	SS-01 (mg/kg)	SS-02 (mg/kg)	SS-03 (mg/kg)	SS-04 (mg/kg)	SS-05 (mg/kg)	SS-06 (mg/kg)	SS-07 (mg/kg)	SS-08 (mg/kg)	SS-11 (mg/kg)	SS-12 (mg/kg)	SS-13 (mg/kg)	SS-15 (mg/kg)	SS-DUP1 (SS-13) (mg/kg)
Dibenzofuran	11 UJ	4.3 U	NR	0.19 U	0.23 U	0.3 I	0.18 U	0.2 I							
Dieldrin	0.0041 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Endosulfan II	0.0041 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Endosulfan sulfate	0.0041 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Endrin ketone	0.0041 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoranthene	7.3 J	40	2.4	0.26	3.4	100	2.8 U	5.8	8.8	1.9	1.8	7.6	30	0.55	32
Fluorene	11 UJ	27	NR	0.19 U	0.29 I	0.71	0.18 U	0.61							
Heptachlor epoxide	0.007 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Indeno(1,2,3-c,d)pyrene	2.5 J	7.5	0.68	0.24 U	2.7 U	49	2.8 U	2.5	3.3	1.5 U	0.94	1.9	4.9	0.33 I	3.8
Iron	8,500	8,300	690	2,200	5,500	5,400	100,000	NR	NR	NR	1,300	5,400	1,800	520	5,000
Lead	67	120	13	44	96	210	48	NR	NR	NR	19	320	140	5.9	140
Magnesium	310	4,100	80	120	2,400	850	470	NR							
Manganese	29	120	6.1	19	140	79	390	NR	NR	NR	10	47	9	5.9	8.6
Mercury	0.1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.7	0.4	NR	NR	NR	0.1	0.099	0.06	0.026	0.1
Methoxychlor	0.13	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylnaphthalene, 1-	NR	69	0.27 U	0.24 U	2.7 U	17 U	2.8	1.4 U	1.5 U	1.5 U	0.19 U	0.23 U	0.47	0.18 U	0.51
Methylnaphthalene, 2-	11 UJ	68	0.27 U	0.24 U	2.7 U	17 U	2.9	1.4 U	1.5 U	1.5 U	0.19 U	0.23 U	0.3 I	0.18 U	0.26 I
Naphthalene	11 UJ	37	0.27 U	0.24 U	2.7 U	17 U	3.1	1.4 U	1.5 U	1.5 U	0.19 U	0.23 U	0.19 U	0.18 U	0.2 I
Nickel	10 J	28	2.5 U	2.5 U	2.5 U	3.4	28	NR							
Phenanthrene	2.5 J	75	1.4	0.24 U	2.8	55	4.3	2.7	1.6	1.5 U	0.65	4.6	12	0.21 I	6.4
Potassium	60	200	66	66	670	72	360	NR							
Pyrene	12 J	46	2.7	0.36	6.8	230	7.9	13	18	3.3	3.5	10	48	0.78	35
Selenium	0.52 U	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U	0.76	NR							
Sodium	40 U	150	9	15	110	69	290	NR							
Vanadium	5.7 J	6.2	2.5 U	2.5 U	6.2	7.4	27	NR							
Zinc	110	100	11	130	140	210	70	NR	NR	NR	24	260	57	22	33

NR Not reported.
 I Value detected between MDL and PQL.
 J Estimated value.
 N Presumptive evidence.
 U Material was analyzed for but not detected. The number is the minimum quantitation limit.

Table B-2
Analytes Detected in Off-site Surface Soil

Table B-2
Analytes Detected in Off-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	CAR	RI	RI	RI	RI	RI	RI							
	SS-CS-05 (mg/kg)	SS-DP-29 (mg/kg)	SS-DP-30 (mg/kg)	SD-UN-01 (mg/kg)	SD-UN-02 (mg/kg)	SD-UN-03 (mg/kg)	SD-UN-04 (mg/kg)	SD-UN-05 (mg/kg)	SED-02 (mg/kg)	SS-9 (mg/kg)	SS-10 (mg/kg)	SS-14 (mg/kg)	SS-16 (mg/kg)	SS-17 (mg/kg)	SS-18 (mg/kg)
Acenaphthene	0.22 J	0.37 U	0.094 J	1.1 U	0.14 J	1,000 J	230 J	640 J	460	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U
Acenaphthylene	0.33 J	0.11 J	0.51 J	1.1 U	0.62 J	400 J	50 J	96 J	61 U	0.18 U	0.33 U	1.4	0.19 U	0.22 U	0.22 U
Aldrin	0.0019 U	0.0019 U	0.0019 U	0.0066	0.017 U	NR	0.0043 U	0.031 U	NR	NR	NR	NR	NR	NR	NR
Aluminum	1,700	1,500	1,400	1,100	2,000	1,700	3,700	3,100	3,400 J	NR	NR	NR	NR	NR	NR
Anthracene	0.36 J	0.04 J	0.17 J	1.1 U	0.2 J	800 J	140 J	330 J	160	0.18 U	0.33 U	0.48 I	0.19 U	0.22 U	0.22 U
Antimony	0.59 UJ	0.65 U	0.64 U	1.4 J	4.6 J	4.9 J	6 J	10 J	15 U	NR	NR	NR	NR	NR	NR
Arsenic	1.9 J	0.90 J	2 J	4 U	7.3	14	9.4	11	14	0.5 U	1 U	24	0.9 I	7	0.9 I
Barium	15	13	24	55	130	65	81	81	56	22 U	40 U	82	23 U	28	27 U
Benzene	NR	NR	NR	0.033 U	0.02 UJ	0.12	0.13 U	0.037 U	1.0 U	NR	NR	NR	NR	NR	NR
Benzo(a)anthracene	1.4 U	0.63	2.2	0.35 J	1.4	770 J	160 J	270 J	120	0.22 I	0.33 U	4.7	0.19 U	0.22 U	0.22 U
Benzo(a)pyrene	0.8 J	0.77	2.7	0.35 J	1.0	460 J	140 J	240 J	89	0.18 U	0.33 U	5.9	0.19 U	0.22 U	0.22 U
Benzo(b and/or k)fluoranthene	1.1 J	1.4	4.2	0.59 J	2.4 J	660 J	180 J	290 J	NR	NR	NR	NR	NR	NR	NR
Benzo(b)fluoranthene	NR	77	0.22	0.33 U	4.9	0.19 U	0.22 U	0.22 U							
Benzo(g,h,i)perylene	1.4 UJ	0.37 U	0.31 J	1.1 U	0.46 J	100 J	38 J	66 J	61 U	0.18 U	0.33 U	1.8	0.19 U	0.22 U	0.22 U
Benzo(k)fluoranthene	NR	61 U	0.21	0.33 U	4.7	0.19 U	0.22 U	0.22 U							
BHC, alpha-	0.0018 J	0.0019 U	0.0019 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl)phthalate	1.4 U	0.37 U	0.73 U	NR	NR	NR	NR	NR	NR	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U
Cadmium	1 UJ	1 U	1 U	1 UJ	2 UJ	2 UJ	1 UJ	2 UJ	1.3	1 U	2 U	2.1	1 U	2.4	1 U
Calcium	32,000	34,000	39,000	7,500	6,900	5,100	9,700	12,000	7,900	NR	NR	NR	NR	NR	NR
Carbazole	1.4 U	0.37 U	0.73 U	1.1 U	0.66 U	32 J	110 UJ	170 UJ	NR	NR	NR	NR	NR	NR	NR
Chlordane, alpha-	0.0019 U	0.0019 U	0.0021	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	3.2	4.1	5.3	2.9 J	14	4.8	11	9.1	11	3.7	2.2	15	4.1	9	2.8
Chrysene	1.4 U	0.64	2.0	0.36 J	1.2	630 J	160 J	260 J	99	0.21 I	0.33 U	4.2	0.19 U	0.22 U	0.22 U
Cobalt	0.24 U	0.27 U	1 U	1 U	2.3 J	1.6 J	2.6 J	3 J	2.5 U	NR	NR	NR	NR	NR	NR
Copper	5 UJ	7.7	18	17 J	140 J	110 J	190 J	140 J	120	7	10 U	76	6 U	13	7.2
Cyanide	0.2 U	0.2 U	0.3 U	0.3 U	15	46	22	2	20	0.1 U	0.2 U	5.4	0.1 U	0.1 U	0.1 U
DDE, 4,4'-	0.018 N	0.0037 U	0.008 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dibenzo(a,h)anthracene	1.4 UJ	0.37 U	0.73 U	1.1 U	0.16 J	45 J	13 J	20 J	61 U	0.18 U	0.33 U	0.71	0.19 U	0.22 U	0.22 U
Dibenzofuran	1.4 U	0.37 U	0.73 U	1.1 U	0.66 U	220 J	222 J	67 J	NR	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U
Dieldrin	0.0036 U	0.0037 U	0.0061 N	0.0043 J	0.033 U	NR	0.0084 U	0.061 U	NR	NR	NR	NR	NR	NR	NR
Dimethylphenol, 2,4-	NR	NR	NR	0.18 J	0.66 U	110 UJ	110 UJ	170 UJ	NR	NR	NR	NR	NR	NR	NR

NR Not reported.
I Value detected between MDL and PQL.
J Estimated value.
N Presumptive evidence.
U Material was analyzed for but not detected. The number is the minimum quantitation limit.

Table B-2
 Analytes Detected in Off-Site Surface Soil
 Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	RI	RI													
	SS-19 (mg/kg)	SS-20 (mg/kg)	SS-21 (mg/kg)	SS-22 (mg/kg)	SS-23 (mg/kg)	SS-24 (mg/kg)	SS-25 (mg/kg)	SS-26 (mg/kg)	SS-27 (mg/kg)	SS-28 (mg/kg)	SS-29 (mg/kg)	SS-30 (mg/kg)	SS-31 (mg/kg)	SS-DUP-2 (SS-20) (mg/kg)	SS-DUP-3 (SS-24) (mg/kg)
Acenaphthene	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	1.7 U	0.18 U	0.19 U	1.9 U	0.18 U	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Acenaphthylene	0.20 U	0.17 U	0.89	0.17 U	1.8 U	1.7 U	0.24 I	2.1	1.9 U	5.3	0.24 I	0.18 U	0.19 U	0.17 U	2.8 I
Aldrin	NR	NR													
Aluminum	NR	NR													
Anthracene	0.20 U	0.17 U	0.25 I	0.17 U	1.8 U	1.7 U	0.18 U	0.63	1.9 U	0.88	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Antimony	NR	NR													
Arsenic	0.6 U	2.3	4	2	8.6	6.1	1.6 I	43	8 I	0.5 U	0.5 U	0.5 U	0.7	2.6	6.3
Barium	24 U	20 U	32	21 U	75	49	22 U	650	1,100	22 U	22 U	21 U	96	20 U	34
Benzene	NR	NR													
Benzo(a)anthracene	0.20 U	0.17 U	1.2	0.3	4.4	9.3	1.6	6.3	4.9	6.5	0.52	0.18 U	0.28 I	0.17 U	18
Benzo(a)pyrene	0.20 U	0.17 U	2.3	0.28	4.5	12	1.7	8.5	5.8	18	0.89	0.18 U	0.25 I	0.17 U	23
Benzo(b and/or k)fluoranthene	NR	NR													
Benzo(b)fluoranthene	0.20 U	0.17 U	2.4	0.28	3.5 I	9.4	2.2	8.2	5	15	0.72	0.18 U	0.33	0.17 U	19
Benzo(g,h,i)perylene	0.20 U	0.17 U	0.83	0.17 U	6.1	11	0.75	3	7.7	0.18 U	0.46	0.18 U	0.19 U	0.17 U	22
Benzo(k)fluoranthene	0.20 U	0.17 U	2.2	0.33	3.2	9.1	2.2	8.4	4.6	15	0.72	0.18 U	0.25	0.17 U	18
BHC, alpha-	NR	NR													
Bis(2-ethylhexyl)phthalate	NA	NA	0.22 U	NA	NA	NA	0.18 U	0.19 U	NA	0.18 U	0.18 U	0.20 I	0.28 I	NR	NR
Cadmium	1 U	1 U	1 U	1 U	2.2	5	1 U	12	12	1 U	1 U	1 U	1.7	1 U	2
Calcium	NR	NR													
Carbazole	NR	NR													
Chlordane, alpha-	NR	NR													
Chromium	1	4.6	3.5	4.9	14	10	2.4	44	58	3.9	4.6	2.8	20	7.6	6.6
Chrysene	0.20 U	0.17 U	1.4	0.37	4.1 I	9.1	0.18 U	6.3	4.6 I	8.6	0.53	0.18 U	0.27 I	0.17 U	20
Cobalt	NR	NR													
Copper	6 U	5 U	24	11	140	46	13	460	740	7.5	13	5	140	5	3.3
Cyanide	0.1 U	0.1 I	0.1 U	0.1 I	0.1 U										
DDE, 4,4'-	NR	NR													
Dibenzo(a,h)anthracene	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	2.2 I	0.18 I	1	1.9 U	1.7	0.18 U	0.18 U	0.19 U	0.17 U	4.1
Dibenzofuran	NA	NA	0.22 U	NR	NR	NR	0.18 U	0.19 U	NA	0.18 U	0.18 U	0.18 U	0.19 U	NR	NR
Dieldrin	NR	NR													
Dimethylphenol, 2,4-	NR	NR													

NR Not reported.
 I Value detected between MDL and PQL.
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Table B-2
Analytes Detected in Off-Site Surface Soil
Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	ESI	CAR	RI	RI	RI	RI	RI	RI							
	SS-CS-05 (mg/kg)	SS-DP-29 (mg/kg)	SS-DP-30 (mg/kg)	SD-UN-01 (mg/kg)	SD-UN-02 (mg/kg)	SD-UN-03 (mg/kg)	SD-UN-04 (mg/kg)	SD-UN-05 (mg/kg)	SED-02 (mg/kg)	SS-9 (mg/kg)	SS-10 (mg/kg)	SS-14 (mg/kg)	SS-16 (mg/kg)	SS-17 (mg/kg)	SS-18 (mg/kg)
Endosulfan sulfate	0.0036 U	0.0013 J	0.0037 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Endrin	NR	NR	NR	0.011 U	0.033 U	NR	0.0094 N	0.057 J	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	0.054	NR	NR	0.033 U	0.02 UJ	1.5	0.014 J	0.079	98	NR	NR	NR	NR	NR	NR
Fluoranthene	0.89 J	0.57	2.4	0.48 J	1.3	1,800 J	310 J	580 J	270	0.34 I	0.33 U	7.2	0.19 U	0.22 U	0.22 U
Fluorene	0.34 J	0.37 U	0.73 U	1.1 U	0.1 J	1,400 J	150 J	430 J	240	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U
Heptachlor epoxide	0.0019 U	0.0019 U	0.0021 N	0.0056 U	0.011 J	NR	0.01 U	0.4 U	NR	NR	NR	NR	NR	NR	NR
Indeno(1,2,3-c,d)pyrene	1.4 UJ	0.28 J	0.89	0.12 J	0.55 J	120 J	38 J	66 J	61 U	0.18 U	0.33 U	2.4	0.19 U	0.22 U	0.22 U
Iron	910	1,400 J	2,300 J	2,500	21,000	8,800	12,000	13,000	8,900	1,100	920	14,000	4,100	20,000	1,300
Lead	23	29	77	58	300	260	260	1,000	240	27	44	300	2	32	25
Magnesium	280	400	490	370	370	260	640	660	550	NR	NR	NR	NR	NR	NR
Manganese	13	13	26	52	150	620	250	270	34	20	10	120	2.8	230	19
Mercury	0.04 U	0.06 U	0.06 U	0.12 U	0.31	0.2 U	0.11 U	0.12 U	0.2 U	0.05	0.022 I	0.23	0.01 U	0.044	0.043
Methylnaphthalene, 1-	NR	810	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U							
Methylnaphthalene, 2-	7.7	0.37 U	0.73 U	1.1 U	0.12 J	1,300 J	58 J	430 J	1,100	0.18 U	0.33 U	0.25 U	0.19 U	0.22 U	0.22 U
Methylphenol, (3-and/or 4-)	NR	NR	NR	1.9	0.34 J	110 UJ	110 UJ	170 UJ	NR	NR	NR	NR	NR	NR	NR
Naphthalene	6.0	0.37 U	0.73 U	1.1 U	0.19 J	640 J	50 J	180 J	1,200	0.18 U	0.33 U	0.27	0.19 U	0.22 U	0.22 U
Nickel	3.9 J	1.2 J	2.4 J	2.9 J	13 J	4.8 J	9.8 J	9.4 J	11	NR	NR	NR	NR	NR	NR
Pentanone, 4-methyl-2- (MIBK)	NR	NR	NR	0.033 U	0.02 UJ	0.12 U	0.13 U	0.006 J	10.0 U	NR	NR	NR	NR	NR	NR
Phenanthrene	1.0 J	0.089 J	0.41 J	0.21 J	0.53 J	4,200 J	450 J	1,300 J	670	0.18 U	0.33 U	1.3	0.19 U	0.22 U	0.22 U
Potassium	53	88	83	180	190	110	160	180	190	NR	NR	NR	NR	NR	NR
Pyrene	1.9	1.4	4.2	0.58 J	2.1	2,700 J	530 J	940 J	310	0.32 I	0.33 U	10	0.19 U	0.29 I	0.22 U
Selenium	0.41 U	0.45 U	0.44 U	2 U	2 U	3	3	3 U	0.79	NR	NR	NR	NR	NR	NR
Silver	NR	2.5 U	2 U	4 U	3 U	2 U	3 U	3 U							
Sodium	170 U	30 U	30 U	160 U	60 U	50	110 U	120 U	77	NR	NR	NR	NR	NR	NR
Toluene	NR	NR	NR	0.033 U	0.02 UJ	0.14	0.13 U	0.037 U	1.0 U	NR	NR	NR	NR	NR	NR
Vanadium	29	5 J	5.7 J	6.8 J	54	4.6 J	10 J	8.5 J	8.8	NR	NR	NR	NR	NR	NR
Xylenes, Total	0.17	NR	NR	0.033 U	0.02 UJ	1.2	0.056 J	0.062	24	NR	NR	NR	NR	NR	NR
Zinc	27	39	150	58	400	260	280	280	330	29	44	300	11	110	33

NR Not reported.
I Value detected between MDL and PQL.
J Estimated value.
N Presumptive evidence.
U Material was analyzed for but not detected. The number is the minimum quantitation limit.

Table B-2
 Analytes Detected in Off-Site Surface Soil
 Sanford Gas Plant 1997 ESI Data, 1994 CAR Data and 1999 RI Data

ANALYTE	RI	RI													
	SS-19 (mg/kg)	SS-20 (mg/kg)	SS-21 (mg/kg)	SS-22 (mg/kg)	SS-23 (mg/kg)	SS-24 (mg/kg)	SS-25 (mg/kg)	SS-26 (mg/kg)	SS-27 (mg/kg)	SS-28 (mg/kg)	SS-29 (mg/kg)	SS-30 (mg/kg)	SS-31 (mg/kg)	SS-DUP-2 (SS-20) (mg/kg)	SS-DUP-3 (SS-24) (mg/kg)
Endosulfan sulfate	NR	NR													
Endrin	NR	NR													
Ethylbenzene	NR	NR													
Fluoranthene	0.20 U	0.17 U	2.9	0.65	4.9	11	3.5	9.6	5.5	6.8	0.58	0.18 U	0.72	0.17 U	24
Fluorene	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	1.7 U	0.18 U	0.21	1.9 U	0.24 I	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Heptachlor epoxide	NR	NR													
Indeno(1,2,3-c,d)pyrene	0.20 U	0.17 U	0.76	0.17	3.9	7.5	0.7	2.8	3.7	5.3	0.36 I	0.18 U	0.19 U	0.17 U	14
Iron	420	990	3,900	1,600	34,000	10,000	950	94,000	130,000	1,700	2,000	640	5,800	2,200	7,000
Lead	9	39	77	43	320	190	44	1,600	3,000	41	22	8.7	93	15	89
Magnesium	NR	NR													
Manganese	7.8	22	16	22	150	48	15	740	1,000	14	12	4.7	46	16	47
Mercury	0.015	0.023	0.064	0.04	0.3	0.09	0.038	0.28	0.28	0.036	0.11	0.047	0.37	0.023	0.078
Methylnaphthalene, 1-	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	1.7 U	0.18 U	0.19 U	1.9 U	0.18 U	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Methylnaphthalene, 2-	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	1.7 U	0.18 U	0.19 U	1.9 U	0.18 U	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Methylphenol, (3-and/or 4-)	NR	NR													
Naphthalene	0.20 U	0.17 U	0.22 U	0.17 U	1.8 U	1.7 U	0.18 U	0.23	1.9 U	0.18 U	0.18 U	0.18 U	0.19 U	0.17 U	1.7 U
Nickel	NR	NR													
Pentanone, 4-methyl-2- (MIBK)	NR	NR													
Phenanthrene	0.20 U	0.17 U	1	0.27	1.8 U	1.7 U	0.7	0.8	1.9 U	0.33	0.21 I	0.18 U	0.3	0.17 U	3
Potassium	NR	NR													
Pyrene	0.20 U	0.19	4.5	0.55	10	24	3.3	16	11	22	0.76	0.18 U	0.40 I	0.17 U	52
Selenium	NR	NR													
Silver	2 U	2 U	3 U	2 U	21 U	10 U	2 U	2 U	23 U	2 U	2 U	2 U	7	2 U	10 U
Sodium	NR	NR													
Toluene	NR	NR													
Vanadium	NR	NR													
Xylenes, Total	NR	NR													
Zinc	12	18	110	64	340	720	55	2,100	4,400	30	46	9.8	250	21	400

NR Not reported.
 I Value detected between MDL and PQL.
 J Estimated value.
 N Presumptive evidence.
 U Material was analyzed for but not detected. The number is the minimum quantitation limit.